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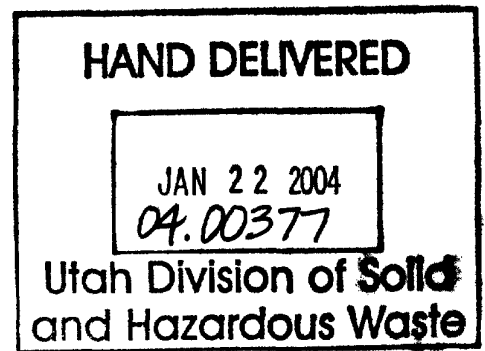
Utah Division of Solid
and Hazardous Waste

RENEWAL DOCUMENTS

LONG HOLLOW SANITARY LANDFILL

JANUARY 2004

PREPARED BY: TED TAYLOR



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**PERMIT RENEWAL APPLICATION FOR THE EXISTING
LONG HOLLOW SANITARY LANDFILL**

JANUARY 2004

**PREPARED BY: TED TAYLOR
18 SOUTH MAIN
LOA, UTAH 84747**

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APPLICATION

INTRODUCTION

This report serves as the renewal application for the Long Hollow Sanitary Landfill located approximately 4 miles Southwest of Loa, Utah in what is known as Long Hollow. The purpose of the report is to comply with R315-310-3 Administrative Rules of the Utah Solid and Hazardous Waste Control Board, Utah Department of Environmental Quality.

The landfill is currently located on two hundred acres for operation of a Class II facility. The facility also includes Class IVb disposal cells. The landfills are capable of servicing the county's current and future needs. The site is centrally located in an effort to accommodate regionalization should local municipalities desire to participate with the county in such activities. The site is also capable of being expanded to service national park units and state park units if interagency agreements are reached in the future. In addition, the site is relatively isolated, has sloping topography, and has positive characteristics when considering precipitation, groundwater, available cover material, and soil permeability. Exhibit 1 and Exhibit 2 are general vicinity maps depicting the site.

GENERAL COMMENTS

During the original permitting process for the Long Hollow Landfill, two separate permits were issued. A Class II permit was issued on December 19, 1994 for management of municipal solid waste. A Class IV permit was issued on March 1, 1995 for management of the construction/demolition waste in separate disposal cell. This permit renewal application combines the Class II operation and the Class IV operations into a single Class II permit application.

RESPONSIBLE PARTIES

The applicant, property owner, and responsible party for site operation is:

Wayne County
Wayne County Courthouse
18 South Main
Loa, Utah 84747
Attn: Scott Durfey
Phone: (435) 836-2731

Technical questions and comments regarding the application can be directed to:

Ted Taylor
18 South Main
Loa, Utah 84747

Future agreements, potential special service district creation, and alternate ownership/operation scenarios may require modification of this section of the permit. In addition, the county may contract site operations with private entities. Wayne County will notify the Executive Secretary of any changes in responsible party status at least 30 days prior to their effective date.

GENERAL DESCRIPTION

The Long Hollow Sanitary Landfill is a Class II natural attenuation facility designed to fulfill the current and future solid waste disposal needs of Wayne County, Utah. The facility encompasses a total of 200 acres and services Loa, Lyman, Bicknell, Torrey, Hanksville and unincorporated areas under the jurisdiction of the county commission. Annual average waste volumes are estimated at less than 20 tons per day, and precipitation is less than 25 inches per year.

Adequate capacity exists and subsurface geohydrology is sufficient to permit expansion to Class I status (with the addition of appropriate clay liners and leachate collection systems) and acceptance of waste in volumes exceeding 20 tons per day. Modifications to the permit will be made as necessary to accommodate larger volumes and as cooperative agreements are executed with other solid waste managers. Facility plans are included in other sections of this document; construction specifications may be forwarded under separate cover.

LEGAL DESCRIPTION

The site is legally described as the East half of the East half of the Southeast Quarter of Section 21, the East half of the Southeast Quarter of the Northeast Quarter of Section 21, the West half of the Southwest Quarter of Section 22, and the Southwest Quarter of the Northwest Quarter of Section 22, Township 28 South, Range 2 East, Salt Lake Base & Meridian. In addition to the parcels described above, the West half of the Southeast Quarter of the Southwest Quarter of Section 22 is being used for a Class IV operation. Exhibit 2 depicts the site's relationship to adjacent Sections, Townships and Ranges.

The facility's main gate is located on an existing county road 11°41'17" longitude and 38°21'57" latitude (the Northwest corner of the Southwest Quarter of the Northwest Quarter of Section 22, Township 28 South, Range 2 East). Lands surrounding the facility are considered multiple use lands and are controlled by state or federal agencies. The closest private land exists approximately 2 miles Northeast of the site in Section 11, Township 28 South, Range 2 East.

WASTE TYPES/AREAS TO BE SERVED

The Long Hollow Sanitary Landfill receives less than 20 tons of waste per day, based on a 2 year average, and is therefore considered a Class II facility. The Long Hollow Sanitary Landfill accepts the following types of waste for disposal or recycling:

- household waste (excluding bulk liquids)
- non-hazardous industrial waste
- commercial waste
- dead animals
- white goods and scrap metal
- tires
- yard waste
- construction/demolition waste
- non-hazardous sludge containing no free liquids
- car bodies
- non-friable asbestos

The service area consists of all lands within the legal boundaries of Wayne County. In order to maintain it's municipal, non-profit status, the Long Hollow Sanitary Landfill only accepts waste generated outside the service area if an appropriate interlocal agreement or memorandum of understanding has been executed with the governmental solid waste manager where the waste is generated.

PLAN OF OPERATION

INTRODUCTION

This Plan of Operation has been prepared by Wayne County to reflect the operation of the Long Hollow Landfill in compliance with the Utah Solid Waste Permitting and Management Rules, R310-301 through 320 of the UAC. This Plan of Operation is an integral part of the application for a permit to operate a Class II facility as set forth in UAC R315-310-4, and is submitted to UDEQ as the solid waste management authority for Wayne County.

The Long Hollow Landfill is owned and operated by Wayne County. County offices are located at 18 South Main, Loa, Utah. The original Plan of Operation shall be retained in the County offices, and a copy of the Plan will be maintained at the landfill. All components of the landfill's operating record will be provided to UDEQ upon request for review. The responsibility for compliance with the Plan shall be that of the Landfill Manager. The plan will be available for review by employees involved in the daily operations of the facility, as well as to other parties and regulatory agencies, as requested.

HOURS OF OPERATION

Landfill personnel will be onsite during all hours the facility is open to the public. The schedule for operation of the Long Hollow Landfill is:

April 1st - October 15th

Monday, Wednesday, Friday 2 pm - 7 pm

Saturday 1 pm - 5 pm

October 15th - April 1st

Monday, Wednesday, Friday 2 pm - 5 pm

Saturday 2 pm - 5 pm

Collection vehicles enter the landfill when the facility is not open to the public. Waste is not accepted from the public during these periods. The schedule is currently in operation at Wayne County's existing facility and is functioning adequately. Wayne County intends to revise the scheduled operation of the landfill as the need arises and solid waste volumes dictate.

SCHEDULE OF CONSTRUCTION

The existing layout and facilities are depicted on Exhibits 3A - 3E.

WASTE HANDLING PROCEDURES

All incoming vehicles are stopped by the landfill attendant at the gate. Commercial vehicles are weighed before and after discharging waste loads. Private haul vehicle load weights are estimated based on type and volume of waste. The date, time, vehicle owner, and origin of the waste are recorded on the "Weighed on a Fairbanks Scale" form for every incoming load. A copy of the form is included as Exhibit 4. A receipt is issued for every incoming load. Daily totals are recorded on the "Daily Operating Record" attached as Exhibit 5.

Commercial and private loads are inspected on a random basis, at a frequency of 1% of all loads, for the presence of prohibited waste. Incoming vehicles are stopped by the attendant at the scale house and inspected for hazardous materials. A "Waste Inspection Form" is completed for all accepted and refused loads. A copy of this form is included as Exhibit 6. Inspection records are maintained in the Landfill office.

Landfill signs are positioned to direct incoming traffic to the appropriate disposal areas. Private haulers are directed to discharge their loads in a public discharge area near the base or top of the active face, depending on the configuration of the access road to the disposal area. Commercial

haulers dump directly at the active disposal face.

Equipment dedicated to the Long Hollow Sanitary Landfill for waste and soil handling and general site operations are listed below:

- 1997 Chevrolet Garbage Truck
- 2000 Volvo Garbage Truck
- 1992 Peterbilt Roll-on Truck
- 621 CAT Scraper
- 816 CAT Compactor
- D8 CAT Dozer
- 55C Clark Loader
- 544 G John Deere Loader
- 2001 Dodge Ram Pickup Truck
- 1991 Chevrolet Pickup Truck

Additional heavy equipment is available from the Wayne County Road Department on an as-needed basis. Minor vehicle maintenance is performed onsite by landfill personnel. Major repairs are performed either at the County Road Department facilities or by a contractor.

HOUSEHOLD & COMMERCIAL WASTE

Most of the waste generated in the County is picked up and hauled to the Landfill by Wayne County Landfill personnel. Incoming waste from commercial and private haulers is discharged at or near the active disposal face. Landfill personnel move discharged loads from the unloading area to the active face. The waste is spread in layers not exceeding two feet in thickness, and compacted using multiple passes of a Caterpillar 816B steel wheeled landfill compactor. Waste is covered daily with six inches of soil. Wind fences are also placed around the working face of the household/commercial waste cell for litter control.

INDUSTRIAL WASTES

The Long Hollow Landfill does not currently accept industrial waste. However, the facility will accept non-hazardous solid waste generated by industrial sources, provided sufficient documentation is submitted to verify the non-hazardous nature of the material.

DEAD ANIMALS

The Long Hollow Landfill accepts dead animals for disposal in a separate monofill within the landfill property. All received dead animals are covered at the end of the working day with a

minimum of six inches of soil.

WHITE GOODS AND SCRAP METAL

White goods and scrap metal are stockpiled in a designated area. A licensed metal recycling service is contracted to remove stockpile no less than once a year. Operating Records contain the date, volume, and tonnage for materials removed from the landfill.

TIRES

Tires are currently stockpiled in a designated area until a sufficient amount is accumulated. At that time, the State of Utah is contacted and arrangements are made for tire pickup through the State funded tire recycling program. Operating Records contain the date, volume, and tonnage for materials removed from the landfill.

YARD WASTES

Yard waste is vegetative matter generated from landscaping, lawn maintenance, and land clearing operations and may include tree and brush trimmings, grass clippings, and other discarded material from yards, gardens and parks. Yard waste does not include garbage, paper, plastic, sludge, septage, or manure. Loads containing only stumps, branches, tree clippings, and/or grass clippings are directed to a designated yard waste stockpile. The stockpile is periodically burned after the appropriate permits are obtained from the local fire marshall.

CONSTRUCTION/DEMOLITION WASTES

UAC 315-301-2(16) defines construction/demolition (C&D) waste as waste from building materials, packaging, rubble resulting from construction, remodeling, repair, and demolition operations on pavements, houses, commercial buildings, and other structures. Typical C&D waste includes bricks, concrete or other masonry materials, soil, rock, untreated lumber, rebar, and tree stumps.

Construction waste is deposited in a separate monofill and covered with soil as often as is necessary to reduce the potential for fires and vector harborage.

ASBESTOS WASTES

The Long Hollow Landfill currently accepts only non-friable asbestos for disposal.

HAZARDOUS/PCB WASTE EXCLUSION PROGRAM

According to UAC R315-303-4(7), an owner or operator shall not knowingly dispose, treat, store, or handle hazardous waste or waste containing PCSs. The following sections describe load inspection, training, and handling procedures employed at the Long Hollow Landfill.

All incoming loads are visually inspected at or near the active disposal area. Private haul vehicles are also inspected at the gate for the presence of prohibited materials. The landfill manager is properly trained and certified to identify regulated hazardous or PCB wastes. Landfill employees are trained by the landfill manager in proper screening and identification of hazardous and PCB wastes. Loads which are suspected of containing a high liquid content in accordance with these procedures are sent directly to another landfill which can accept hazardous or PCB wastes.

BULK LIQUIDS

Bulk liquids may not be disposed in the landfill. Loads which are suspected of containing a high liquid content in accordance with these procedures are sent directly to another facility which can accept bulk liquid wastes.

All vehicles containing nonhazardous sludge are directed to the proper disposal area where the waste is slowly spread on the ground for treatment. The sludge spreading area is identified on the site development drawings on Exhibits 3D & 3E.

TRAINING & SAFETY

The landfill manager, along with one additional employee, has attended the Manager of Landfill Operations training course provided by the Solid Waste Association of North America (SWANA). His training includes the following courses:

- Operational Issues for Landfill Managers
- Manager of Landfill Operations
- Basic First Aid and Safety Training
- Solid Waste Screening
- Training Sanitary Landfill Operating Personnel

The landfill manager is responsible for disseminating his knowledge regarding landfill

operations to other landfill employees. All additional employees have been trained on the identification and exclusion of hazardous wastes. Safety procedures conform to OSHA guidelines and all personnel are encouraged to participate in additional landfill management, waste screening, safety, and first aid workshops.

All new employees are required to read the landfill permit application and permit within the first month of employment. Documentation that the application and plan has been read is included in the operating record. Initial training needed to work onsite is provided by the landfill supervisor. Additional training is provided during employment at the landfill.

Communications at the landfill are facilitated by two-way radios in each county vehicle and a cellular telephone in the landfill gatehouse. As a result, communication capabilities are sufficient to enable contact with emergency services to protect the safety of staff and users of the site.

INSPECTIONS AND MONITORING

Inspection and monitoring at the Long Hollow Sanitary Landfill on incoming material are performed on a random and routine basis to prohibit receipt of unacceptable wastes. Routine waste inspections are made during deposition, spreading, and covering operations to insure protection of the environment and absence of nuisances. Operational inspections are made by supervisory landfill personnel. Random inspections are conducted on at least 1% of all incoming waste loads.

Compliance inspections are conducted quarterly by the Landfill supervisor to assess the integrity of cover, the condition of side slopes and vegetative cover, and the impacts of erosion. All structures, roads, fences, and gates, etc. are inspected quarterly and documented on the "Quarterly Landfill Inspection Form" which is attached as Exhibit 7. Any conditions that do not meet with the approval of the inspector are noted in writing. It becomes the responsibility of the landfill manager to correct the unsatisfactory conditions. In addition, a detailed annual inspection is conducted to verify compliance with all permit conditions and state and federal regulations. All inspections are kept on file at the Landfill office for review.

FUGITIVE DUST ABATEMENT

The landfill access road surface is constructed of cold mix asphalt. Internal landfill access roads are constructed of granulated borrow as shown on Exhibit 3B. Fugitive dust generation from internal site roads is minimal. Internal access roads are watered as necessary to prevent excessive generation of fugitive dust.

FIRE/EXPLOSION CONTINGENCY PLAN

During construction of the initial cell, an alternate disposal site capable of storing one month's waste was developed. The alternative disposal site is the soil excavation area used to generate daily cover soil. In the event of a fire or an explosion that prohibits deposition on incoming waste in the existing cell, materials received at the landfill are diverted to the alternate storage site and are covered daily with a minimum of six inches of soil. Upon resolution of the unexpected event, the materials are transported to its final disposal destination and treated as incoming waste.

Landfill fires and explosions are difficult to control and require different techniques than many incidents handled by local volunteer fire departments. For this reason fires and/or explosions at the Long Hollow Sanitary Landfill are managed by landfill personnel. However, local fire departments will respond to and provide assistance if requested by the landfill manager. The outline for procedures to follow in case of fire or explosion is:

1. Secure Affected Area
2. Divert Incoming Waste
3. Isolate Fire / Explosion
4. Suppress Incident if Possible
5. Request Additional Assistance if Needed
6. Report & Record Necessary Information

CORRECTIVE ACTION FOR CONTAMINATED GROUND WATER

This section describes corrective actions to be taken by owners and operators to regain compliance with protection levels for the Long Hollow Sanitary Landfill in the event concentration limits are exceeded in a down gradient compliance monitoring well.

Currently, there are no monitoring wells at the Long Hollow Landfill. However, if the concentrations of parameters in down gradient wells exceed the concentration limits as substantiated by confirmatory analysis, owners and operators of the Long Hollow Sanitary Landfill will implement a corrective action program as outlined in R315-308.

CONTINGENCY PLAN FOR OTHER RELEASES

This section describes corrective actions to be taken by the Long Hollow Sanitary Landfill to regain compliance with the protection levels of the permit in the event releases are discovered and acceptable concentration limits are exceeded.

When the concentration of parameters exceed acceptable limits as substantiated by confirmatory analysis, owners and operators of the Long Hollow Sanitary Landfill will implement a

corrective action program approved by the Executive Secretary.

EQUIPMENT MAINTENANCE

Active collection systems for leachate and or explosive gases was not originally proposed for the Long Hollow Sanitary Landfill. Therefore, no maintenance is required for these items. Maintenance of equipment used in day to day operations are performed by landfill employees or contracted mechanics in accordance with manufacturers recommendations and industry practices.

RUNON/RUNOFF CONTROL

Wayne County will control the runoff and runoff resulting from the 25 year event from contacting solid waste and leaving the landfill. This will be accomplished through a series of best management practices. Each cell is surrounded with berm style stockpiling of excess excavated material. The berms are approximately 10 feet nominal height and prevent sides for unit 1. The absence of any roads and existing topography South and West of the unit eliminate the possibility of unauthorized vehicular traffic. Fencing in these areas is intended to discourage unauthorized foot traffic. Fencing in areas which are adjacent to the main road consist of 6 feet chain link material. The lockable access gates are provided in these areas.

DISEASE VECTOR CONTROL

The primary method for disease vector control at the Long Hollow Landfill is providing appropriate cover at the close of each day's operation. The cover consists of a 6 inch minimum layer of earthen material.

Rodents and other vermin are not permitted to burrow in the active area of the landfill and trapping or extinction methods are implemented to protect the integrity of the disease vector control program.

ENGINEERING REPORT

SITING CRITERIA

The Long Hollow Sanitary Landfill complies with siting criteria currently mandated by Subtitle D and recognized by the State of Utah Solid and Hazardous Waste Committee. Specifically, no airport is located within 10,000 feet of the landfill. The site is free from unstable areas and is not located within a 100-year flood plain or in any wetland. In addition to federal mandated criteria, the site is compatible with existing land uses, long term landfill operation and is in a remote area free from

dwellings and other incompatible structures such as churches, schools, hospitals, etc. Cultural resources within the landfill are mitigated in accordance with State Historic Preservation Officer requirements. The Long Hollow Sanitary Landfill is not located in a dam failure flood area, above an underground mine, above a salt dome or bed, or adjacent to geologic features which could compromise the structural integrity of the facility. Additionally, the Class II disposal cells and the Class IVB disposal cells have no liners, and the leachate collection systems would not be damaged during a seismic event. Any damage on the surface could be easily repaired with onsite equipment.

LINER DESIGN

Current volumes of solid waste disposed, as measured by scales serviced by the Long Hollow Landfill, are well below 20 tons per day, and the facility is eligible for small landfill design exemptions. The landfill meets all the requirements of the small landfill exemption as explained in R315-303-3(3)(e) i.e. the average precipitation is less than 25 inches per year, with no evidence of groundwater contamination, and no reasonable alternative. These exemptions include liner design and groundwater monitoring. When average annual volumes exceed 20 tons per day, the Long Hollow Sanitary Landfill may have to design the next disposal cell with liners, leachate collection and groundwater monitoring. Final cover on the facility will initially consist of at least 18 inches of material having a permeability of 1×10^{-6} cm/sec. or less covered with at least 40 inches of soil to protect from frost damage, and 6 inches of native material for topsoil. Managers of the landfill may (with approval of the Executive Secretary) install synthetic liners, covers, or alternate systems if they exceed the permeability requirements described above.

Waste volumes are well below 20 tons per day, based on a two year average. If accepted volumes increase dramatically and average daily volumes exceed 20 tons, the liner will be constructed, and the Executive Secretary may upgrade the landfill's classification to Class I status. Final cover, leachate collection and other design requirements associated with Class I status will be approved by the Executive Secretary prior to implementation.

BORROW SOURCES

The Long Hollow Sanitary Landfill utilizes onsite borrow materials for daily cover, final cover, and soil liners. Current estimates indicate more than 3 million cubic yards of suitable material is available within the landfill limits. Cell location utilizes excavated onsite material and provides for ongoing borrow operations.

If, for any reason, existing onsite soils become unsuitable, alternate borrow sources will be obtained and submitted to the Executive Secretary for approval.

LEACHATE COLLECTION, TREATMENT AND DISPOSAL

The Long Hollow Sanitary Landfill is a natural attenuation facility located in an arid region with favorable soil conditions. Water balance calculations indicate a diminimus volume of leachate will be generated at the landfill. HELP Model simulations for an area left open to precipitation for 5 years indicate waste would be at wilting point during several periods of each year. The model also demonstrated an absence of leachate during the 5-year simulation. As a Class II facility, the landfill is exempt from leachate and collection design requirements.

The collection and treatment option described above for Class II status includes best management practices which minimize water infiltration. Components of the best management practices may include: 1) diversion of intermittent washes for storms smaller than the 25 year event, 2) berm-style construction and stockpiling operations, 3) final cover as described above placed as soon as practical after final elevation, 4) sloping of the final cover to promote runoff, and 5) use of intermediate soil covers which resist infiltration.

LANDFILL GAS CONTROL AND MONITORING

Due to the arid nature of the climate at the Long Hollow Sanitary Landfill and the low volume of waste accepted at the facility, landfill gas concentrations are not anticipated to reach significant levels. The large area of the facility is designed to accommodate dissipation of any landfill gases prior to reaching the property boundary. However, gas levels are monitored in all onsite landfill buildings to ensure the accumulation of explosive gases do not exceed 25% on the explosive limit.

Monitoring for landfill gases are conducted as part of the quarterly inspections performed by landfill managers. Concentrations are measured at each onsite structure, as shown on the Quarterly Inspection Report attached as Exhibit 7. Due to the extensive nature of the site, if concentrations at active or closed areas are negligible, landfill managers may elect to eliminate monitoring at remote locations until a reasonable probability of detection exists.

Should unacceptable levels of landfill gases be detected, the Executive Secretary will be immediately notified and the contingency plans described in other areas of this permit will be implemented. Contingency plans will be in compliance with Section R315-303-3(5) of the Utah Solid Waste Permitting and Management Rules.

CELL DESIGN AND OPERATION

The Long Hollow Sanitary Landfill is designed to minimize active areas and to reach final elevation as soon as practical in order to minimize infiltration and leachate generation. The cells are designed to accommodate from two to five years of waste and to expand in an orderly fashion from south to north and from west to east.

Cells are approximately 40 feet in depth, and bottom widths range from 40 feet to 100 feet. Length of the cells vary with volumes of waste, season of the year, and soil stockpile needs. Current proposals contemplate providing a minimum of 1 year excess excavated area for growth and unexpected problems. Interior side slopes were originally 4:1 and may be steepened to 2:1 immediately before receiving waste to expand capacity and augment covering operations.

At the end of the work day, all waste received that day in the Class II disposal cell and the dead animal trench is spread, compacted, and covered with a minimum of 6 inches of native soil. The Class IVb disposal cell will receive a minimum six inches of soil on a regular frequency to avoid a fire hazard.

The 40 foot cell height described earlier is a nominal dimension and does not consider final slopes to promote drainage or additional covering requirements. Cells are anticipated to consist of solid waste compacted in lifts ranging from 7 feet to 12 feet and covered with 6 inches to 12 inches of daily or intermediate cover material. Three lifts may be accommodated in the nominal height.

Minimum equipment requirements at the Long Hollow Sanitary Landfill are limited to a track-type loader for daily operations and periodic use of additional equipment (dozer, scraper, grader, compactor, etc.) for specific covering, stockpiling, contouring and compacting operations. Initially, the facility had at least one piece of equipment dedicated to the landfill and utilized other equipment from the Wayne County Road Department equipment pool as needed. Over time, adequate equipment has been acquired to guarantee the needs of the landfill are met in a timely manner. Exhibit 3C is an illustration of the cell progression.

CLOSURE/POST CLOSURE

Closure of active portions of the Long Hollow Sanitary Landfill contemplates controlling, minimizing, and eliminating threats to human health and the environment from post-closure escape of solid waste constituents, leachate, landfill gases, contaminated runoff, or waste composition products to the ground, groundwater, surface water, and the atmosphere. When an area of the landfill reaches final elevation, intermediate cover consisting of at least 12 inches of soil will be placed on the waste and graded to promote drainage. Not more than 6 months after completion of the intermediate cover, an infiltration barrier consisting of a minimum of 18 inches of material having hydraulic conductivity of less than 1×10^{-6} cm/sec will be constructed. The impermeable barrier will be covered with at least 40 inches of soil to protect from frost damage and dessication. A minimum of 6 inches of native soil or 6 inches of native material capable of supporting vegetative growth will cover the entire landfill.

Closure of construction/demolition cell will consist of 13,380 square yards. The area will be covered with 18 inches of material having the hydraulics of 1×10^{-6} cm/sec, and 40 inches of frost free material, with a final cover of 6 inches of topsoil. The impermeable barrier will be covered with 6 inches of native soil or 6 inches of material capable of supporting vegetative growth.

Post closure care of inactive sections of the landfill will consist of maintaining the integrity of the final and vegetative covers. Any areas subject to erosion will also be corrected and appropriate measures will be implemented to identify and eliminate the source. Groundwater monitoring, leachate collection, and gas collection were not initially proposed for the Long Hollow Sanitary Landfill. Therefore, closure and post-closure activities associated with these functions will not be performed.

GEOHYDROLOGICAL ASSESSMENT

GEOLOGY

The Long Hollow Landfill is situated in the high desert which makes up much of South Central Utah. The area is characterized by rugged mountains commonly known as the Fish Lake area and deep valleys of the Fremont River Basin. The landfill is located on the interface between the mountains and valleys with the surface made up of flat to rolling slopes of alluvial deposits of variable thickness. The elevation of the landfill is approximately 2,500 meters above sea level. East and downgradient of the landfill is the Fremont Valley near Loa. The valley is approximately 300 feet below the landfill's elevation.

Site specific geology of the landfill indicates the area predominantly covered by interbedded alluvial material. The surface material, characterized by silty sands, ranges in depth from 65 feet to 85 feet, and is slightly resistant to infiltration. Laboratory permeability rates for the material have been determined to be as low 1.91×10^{-6} cm/sec. The surface member is underlain by intermittent silts, sand and clays for a depth of 40 feet to 70 feet. This material overlays a very hard to moderately hard volcanic basalt which onsite drilling indicates is at least 165 feet thick. A detailed description of exploratory drill holes can be found in other sections of this application.

There are no apparent faults, unstable slopes and subsidence areas within the boundaries of the landfill.

It should be noted that significant portions of the site are characterized by rolling slopes of alluvial material. Onsite investigations demonstrate natural material will stand at slopes flatter than 2:1.

HYDROLOGY

The climate in the area is mainly dry, semi-arid, continental. The seasons are well defined, and there is a fairly wide daily range in temperature. The average length of the growing season at Loa is assumed to be approximately 138 days. In any given year the length of the growing season may vary considerably from the average. Average annual precipitation at Loa is less than 10 inches. The

largest amount of precipitation is during the months of July and August and the least during February and March. Data kept by the weather bureau on the velocity of wind near the landfill are not available for the area. It would appear, however, that the windiest part of the year is in the spring and the early summer. The prevailing winds are usually dry and blow from the southwest.

ONSITE SOIL PROPERTIES

In order to determine onsite soil properties samples were obtained throughout the drilling depth of two exploratory drill holes located adjacent to an existing road which runs through the middle third of the active area of the landfill.

Data from the drill holes and topographic information indicate surface soils within the active area range from 65 feet to 85 feet in depth. Mechanical analysis and Atterberg Limits were performed on one of the samples; and the remainder of the samples were classified visually. Results indicate surface material is comprised of silty sands. Permeability of the material was also examined and found to be less than 1.91×10^{-6} cm/sec at 95% of maximum laboratory density. Exhibit 8 provides additional data concerning onsite soils.

GROUNDWATER

No groundwater was encountered during the drilling operations. Two drill holes located within active portions of the landfill were drilled to a depth of 300 feet and 200 feet respectively. Information regarding depth to groundwater, aquifers, directional flow rate and water quality data is not available. A well located in Section 3, Township 28 South, Range 2 East (more than 2 miles from the facility) indicates groundwater at a depth of more than 300 feet.

WELLS AND WATER RIGHTS

Contact was made with the State Engineer's office to determine quantity, location, and construction of any private and public wells within 2,000 feet of the landfill site. No wells were identified within the surveyed area. An expanded search determined the closest wells to the site are located in Section 3, Township 28 South, Range 2 East, 2 miles from active portions of the landfill. The 300 feet deep wells are separated from the landfill by two major drainages and more than 300 feet of topographic relief. Considering 1) the depth of the wells; 2) their distance from the landfill, and; 3) existing drainage patterns, the wells are considered hydraulically isolated from the landfill.

An examination of surface rights in the area was also conducted by the State Engineer's office. Six surface rights were found within the two sections occupied by the landfill. Each of the water rights is owned by the BLM and permits the withdrawal of water from intermittent streams and

washes for stock watering. Exhibits 9A through 9D contains the information provided by the State Engineer. Information is not available regarding background and surface water quality assessments in the area.

SURFACE WATERS

No perennial streams, rivers, or permanent surface waters exist within close proximity of the landfill. The closest known surface waters are some flowing wells located approximately 2 miles North of the landfill which have a flow line approximately 300 feet below the final elevation of waste. One intermittent wash, Long Hollow Wash, is located at the Northern boundary of the landfill. The drainage flows only during times of heavy precipitation. It should be noted that the wash is located North of an existing road and is hydraulically isolated from the landfill. Other washes in the area are small insignificant drainages that have formed in the native soil. All intermittent washes and surface waters will be prevented from impacting areas of the landfill which have received solid waste for events smaller than the 25 year storm period.

WATER BALANCE

A worst case water balance for the site was performed utilizing the Army Corp of Engineers HELP Model to assume leachate production. Estimates were developed utilizing temperature and precipitation data obtained from the Loa area and after examining soil properties determined from onsite drilling. Evapotranspiration was generated by the model using mean monthly temperatures for the area and solar indices corrected for latitude. Average annual values ranged from 95.6% to 99.5% of precipitation leaving less than 0.3 inches of available water for potential leachate production. In order to insure additional safety factor, onsite soils were given a permeability rate of only 3.1×10^{-3} cm/sec, the life of the cell was extended from 33 years (3 years active life & 30 years post closure) to 50 years (10 years active life & 40 years post closure), and it was assumed that all precipitation falling on the site throughout the 50 year period infiltrated the cover.

Results indicate no leachate was generated in the bottom 10 feet of waste; waste from 10 to 20 feet above the landfill bottom increased in moisture content less than 0.1% during the 50 year evaluation period. Additional HELP Model simulations indicate more than 110 years are required for leachate to reach the landfill bottom considering the worst case scenario described above. Exhibits 10 and 11A - 11C are summary outputs from the HELP Model Evaluation.

WATER MONITORING SYSTEM

There is no potential for migration of hazardous constituents from the facility to the groundwater during the active life of the facility and during the post closure period. This conclusion is supported by three separate analysis: 1) onsite geologic and hydrologic conditions; 2) water balance and leachate production modeling, and; 3) operational practices which minimize the amount of water

that can come in contact with the waste. Each analysis makes its own strong argument for suspending groundwater monitoring requirements.

Onsite geologic and hydrologic conditions demonstrate a diminimus potential for hazardous constituents reaching groundwater resources. Drilling operations indicate a complete absence of groundwater for a depth of 320 feet. Examination of the closest wells indicates groundwater at elevations 600 feet below the landfill. Permeabilities for the surface material at depths of 20 feet identify laboratory results as low as 1×10^{-6} cm/sec. The permeabilities are for silty sands, and drill logs indicate underlying material to be comprised of intermittent silts, sands and clays with the clays having layers 12 inches to 18 inches thick. These underlying materials are typically more impermeable than the surface material. The intermittent layers of alluvial soils reduce the downward movement of water and dissolved material. Drill holes also indicate consistency, demonstrating a continuous nature of the subsurface material.

In addition to the extreme depth to groundwater and soil conditions which minimize the potential for liquid migration, climatic conditions eliminate the production of significant amounts of leachate. Precipitation is considerably less than 10 inches per year, and potential evapotranspiration exceeds precipitation by more than 500%. The lack of significant moisture passing beyond the vegetative zone is evidenced by the sparsely grown surface plants which are limited by minimum amounts of moisture.

Water balance and leachate production modeling also demonstrate a diminimus potential for hazardous constituents reaching groundwater resources. The HELP model analysis described above indicates several centuries of worst case conditions would be required for leachate to be produced in sufficient quantities to result in the migration of any liquid to the groundwater. The worst case scenario was developed with numerous safety factors including extended open operation, a 40 year post closure period, use of free draining materials instead of impermeable onsite materials, containment of all precipitation to infiltrate the cover, bare ground conditions during a 10 year open period, and uncompacted cover material. In spite of these considerable efforts to create leachate production, results indicate the potential for hazardous constituents reaching the groundwater does not exist. Actual conditions will result in a greater level of confidence and a lower production of leachate than identified by the model.

Operational practices also reduce the amount of water that could possibly come in contact with the waste. Surface waters are diverted by a series of ditches roads and berms designed to protect landfill cells from run on water for storms considerably greater than the 25 year event. Neglecting the exterior ditch, the perimeter road which serves as a berm or a channel, the interior ditch, and any specific channelizing performed by Wayne County, the perimeter dike alone prevents flow resulting from the 500 year event from entering the landfill. The size and progression of the units result in cells being brought to final elevation and closed in the minimum amount of time possible, reducing the amount of water entering the waste. Contouring operations reduce ponding and promote drainage away from active areas; use of alternate daily covers prevent the infiltration of limited precipitation into the waste. The limited working face requires the removal of any snow

from the active area, so incoming waste can be deposited. All of these measures result in the reduction of an extremely limited source of moisture.

Considering onsite geologic and hydrologic conditions, water balance and leachate production modeling, and operational practices which reduce the amount of water contacting the waste, groundwater monitoring and vadose zone monitoring are not justified. In fact, installation of monitoring wells may provide a more viable conduit for groundwater contamination. The Executive Secretary is requested to suspend groundwater monitoring requirements in accordance with Subsection R315-303-3(1) of the Solid Waste Rules.

CLOSURE PLAN

CLOSURE SEASON AND YEAR

Closure operations at the Long Hollow Sanitary Landfill are performed on an ongoing basis. Adequate capacity exists at the landfill to continue operation for many years. A final closing date is estimated to be around October 2005 on the existing cell. Ongoing closure operations are generally performed from May through October, the normal frost free construction period, or as weather permits. No area larger than one disposal unit will remain open longer than 6 months after reaching final elevation. For example, the first municipal solid waste disposal cell is 2.78 acres in size.

FINAL COVER, SEEDING, CONTOURING

Closure operations will consist of leveling, contouring, placement of 40 inches of appropriate covers and seeding as necessary to reduce infiltration and preserve the integrity of the completed areas of the landfill. Areas of the landfill reaching final elevation will be closed within 6 months. Closure operations will include leveling and contouring using intermediate cover to reduce infiltration and ponding. Excess material not meeting permeability requirements may be stripped and utilized in other operations or left in place. After grading operations promoting drainage are complete, 18 inches of material with a permeability of 1×10^{-6} cm/sec or less will be installed. Alternate designs meeting the performance standard of impermeable material may be used if approved by the Executive Secretary prior to placement. Upon completion of the impermeable cover, 6 inches of native material similar to existing topsoil will be placed and seeded. The seed mixture shall be developed after consultation with BLM range specialists and verifying availability of local seed markets. Recently closed sections of the landfill will be evaluated as part of the quarterly inspection process during the first year and then placed on post closure status.

SITE CAPACITY

Site capacity for the entire Long Hollow Sanitary Landfill is estimated upon the figures in Exhibit 3C. Assuming the initial 20 acre parcel, trench style operation (40 feet bottom width, 2:1 side slopes, 40 feet depth), five 8 foot lifts of waste with 1.5 foot intermediate cover, and an average density of 900 lbs. per cubic yard, waste volumes are estimated at 486,000 cubic yards or 218,800 tons.

CLOSURE TIMING AND NOTIFICATION

Closure activities at the Long Hollow Sanitary Landfill will be performed on an ongoing basis. The Executive Secretary will be notified of closure progress by reviewing quarterly and annual reports, and by contacting the Division of Solid and Hazardous Waste Inspectors who have visited the site. Considering the ongoing nature of closure operations and the justification for performing closure operations as a cell reaches final elevation, alternate notification procedures may not be feasible.

FINANCIAL ASSURANCE PLAN

INTRODUCTION

This section of the permit describes compliance with Subsection R315-309, Financial Assurance of the Administrative Rules for Solid Waste Permitting and Management. Cost estimates consider the most expensive option during the period and are based on a third party performing closure and post-closure care.

MECHANISMS

The mechanism used at the Long Hollow Sanitary Landfill is a dedicated escrow/capital improvement account. The account is established with the State Treasurer's Office, and the Utah State Treasurer serves as the escrow agent. A detailed set of procedures has been established by the Treasurer's office. Funds in excess of the estimate listed below may be used for capital improvements, to offset rate increases, operational expenses and other items deemed necessary by landfill managers. The Long Hollow Sanitary landfill may alter the mechanism to include insurance, surety bonds, trust funds, or other options as they become feasible with Executive Secretary approval.

COST ESTIMATE

Cost estimates were developed considering the largest area of the disposal facility requiring final cover during the operating period and using projections for a third party to perform the work. A cost estimate detailing major closure and post closure components is included below. The Executive Secretary is identified as a required signatory on all withdrawals, and transactions affecting the integrity of the account are submitted to the Executive Secretary for approval.

Landfill Closure Cost Estimate Worksheet

A brief description of each line item, as numbered in the tables, is given immediately following this series of tables.

Item	Unit Measure	Cost/Unit	No. Units	Total Cost
1.0 Engineering and Preliminary Site Work				
1.1 Topographic Survey				
1.2 Boundary Survey for Closure				
1.3 Site Evaluation				
1.4 Development of Plans				
1.5 Contract Administration Bidding and Award				
1.6 Administrative Costs for the Certification of Final Cover and Closure Notice				
1.7 Project Management; Construction Observation and Testing				
1.8 Monitor Well Consultant Cost				
1.9 Other Environmental Permit Costs				
1.10 Disposal of Final Wastes				
1.10.1 Disposal Cost				
1.11 Remove Temporary Buildings				
1.12 Remove Equipment				
1.13 Repair/Replace Perimeter Fencing				
1.14 Clean Leachate Lines				
Subtotal				
10 % Contingency				
Engineering Total				

Item	Unit Measure	Cost/Unit	No. Units	Total Cost
2.0 Construction				
2.1 Final Cover System				
2.1.1 Completion of Sidewall Liner				

Utah Division of Solid and Hazardous Waste
Solid Waste Program

5 *SEE ATTACHED EXHIBIT 12: BROWN BROTHERS COST ESTIMATE FOR LANDFILL COVER

2.1.1a	* Soil Placement 6" TOPSOIL	7.65 ACRES	\$2.00/YARD	6,187 CUBIC YRDS	\$12,374.00
2.1.1b	Soil Processing				
2.1.1c	Soil Amendment				
2.1.1d	Soil Purchase	ON-SITE			
2.1.1e	Soil Transportation				
2.1.2	Drainage Layer on Sidewall				
2.1.2a	Geotextile Filter Fabric				
2.1.2b	Geonet/Geotextile Composite				
2.1.2c	Geomembrane Sidewall Liner				
2.2	Completion of Top Cover				
2.2.1	Infiltration Layer (Compacted Clay)				
2.2.1a	* Soil Placement (Compacted) 18"	3.07 ACRES	\$3.00/YARD	7,513 YARDS	\$22,539.00
2.2.1b	Soil Processing				
2.2.1c	Soil Amendment				
2.2.1d	Soil Purchase				
2.2.1e	Transportation				
2.2.2	Geosynthetic Clay Layer				
2.2.2a	Geosynthetic Clay Installation				
2.2.3	Flexible Membrane Cover				
2.2.3a	Flexible Membrane Installation				
2.2.4	Drainage Layer				
2.2.4a	Geonet/Geotextile				
2.2.4b	Sand Layer				
2.2.4c	* Soil Cover 40" FROST FREE	2.3 ACRES	\$3.00/YARD	12,494 YARDS	\$37,482.00
2.2.4d	Geonet/Geotextile Composite				
2.3	Erosion Layer Placement				
2.4	Revegetation				
2.4.1	Seeding	7.65 ACRES	\$800.00/ACRE	1	\$6,120.00
2.4.2	Fertilize				
	TIRE REMOVAL	34 TON	\$100.00/TON	1	\$3,400.00

2.4.3	Mulch				
2.5	Site Grading and Drainage				
2.6	Site Fencing and Security				
2.7	Leachate Collection System Completion				
	Subtotal				
	10% Contingency				
	Construction Total				

Item	Unit Measure	Cost/Unit	No. Units	Total Cost
3.0	Gas Collection System			
3.1	System Design			
3.2	Completion of Gas Collection System			
3.3	Equipment and Installation			
3.3.1	Place Sand			
3.3.2	Install Geonet and Geotextile			
3.3.3	Install Passive Vents			
3.3.4	Install, Rework or Replace Gas Control Equipment			
	Subtotal			
	10% Contingency			
	Gas Collection Total			

Item	Unit Measure	Cost/Unit	No. Units	Total Cost
4.0	Monitor Well Installation Cost			
4.1	Ground Water Monitoring Well Installation, Reworking, or Replacement			
4.2	Install, Rework, or Replace Methane Probe/s			
4.3	Monitor Well, or Methane Probe Plugging			
	Subtotal			
	10% Contingency			

Utah Division of Solid and Hazardous Waste
Solid Waste Program

7

Monitor Well Installation Total				
--	--	--	--	--

Calculation of Total Closure Costs

Engineering Total: _____

Construction Total: _____

Gas Collection Total: _____

Ground Water Total: _____

_____% Contract
Performance Bond: _____

SUBTOTAL: _____

Legal Fees
(_____% Of Subtotal): _____

TOTAL CLOSURE COSTS: \$81,915.00

Landfill Post-Closure Care Cost Estimate Worksheet

Item	Unit Measure	Cost/Unit	No. Units	Total Cost
1.0 Engineering Costs				
1.1 Post-Closure Plan				
1.2 Site Inspection and Record keeping (annual)				
1.3 Correctional Plans and Specifications (annual)	LUMP SUM	\$1,650.00	EACH YEAR	\$49,500.00
1.4 Site Monitoring				
1.4.1 Ground Water Monitoring				
1.4.1a Ground Water Sample Collection				
1.4.1b Ground Water Sample Analysis				
1.4.1c Ground Water Sample Analysis Review and Reporting				
1.4.2 Landfill Gas Monitoring				
1.4.2a Gas Monitoring Data Collection				
1.4.2b Gas Monitoring Data Review and Reporting	LUMP SUM	\$150.00	EACH YEAR	\$4,500.00
2.0 Maintenance Costs				
2.1 Cover Maintenance Costs				
2.1.1 Soil Replacement	83 CUBIC YARDS	\$2.00/YARD ON-SITE	10% OF AC YEAR	\$4,980.00
2.1.2 Vegetation Reseeding	ACRE	\$250.00/ACRE	10% OF AC YEAR	\$750.00
2.2 Equipment Maintenance				
2.2.1 Ground Water well Maintenance and Replacement				
2.2.2 Methane Probe Maintenance and Replacement				
2.2.3 Gas Collection System Operation				
2.2.4 Gas Collection System Maintenance and Repair				
2.2.5 Leachate Collection System				
2.2.5a Leachate Collection System Repair and Maintenance				
2.2.5b Clean Leachate Lines				

Utah Division of Solid and Hazardous Waste
Solid Waste Program

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3.0	Final Plugging of Monitoring Wells				
3.1	Final Plugging of Methane Probes				
3.2	Final Plugging of Ground Water Monitoring Wells				
3.3	Gas Control Equipment Removal				
4.0	Leachate Disposal				
5.0	Site Maintenance				
5.1	Repair of Surface Water Diversion Structures				
5.2	Repair of Fences and Gates	LUMP SUM	\$250.00	EACH YEAR	\$7,500.00
5.3	General Maintenance				
	Subtotal				
	10% Contingency				
	Post-Closure Care Total				

Total Closure and Post-Closure Costs

Total Closure Costs:	<u>\$81,915.00</u>
Total Post-Closure Care Costs:	<u>\$67,230.00</u>
Total Cost:	<u>\$149,145.00</u>

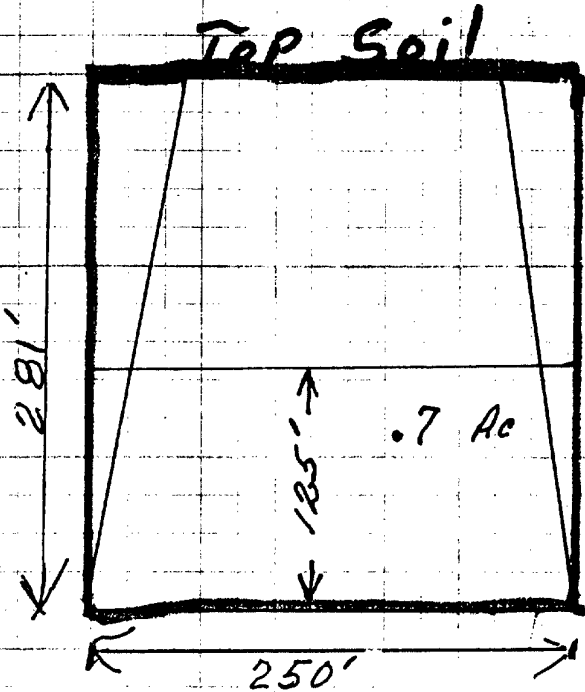


1-800-748-4130
(801) 394-6621
Fax: (801) 626-1315

OGDEN
NORTH SALT LAKE
WEST JORDAN
HURRICANE
LAS VEGAS

Project:	Page:
Location:	Date:
Product:	By:
Client:	Checked:

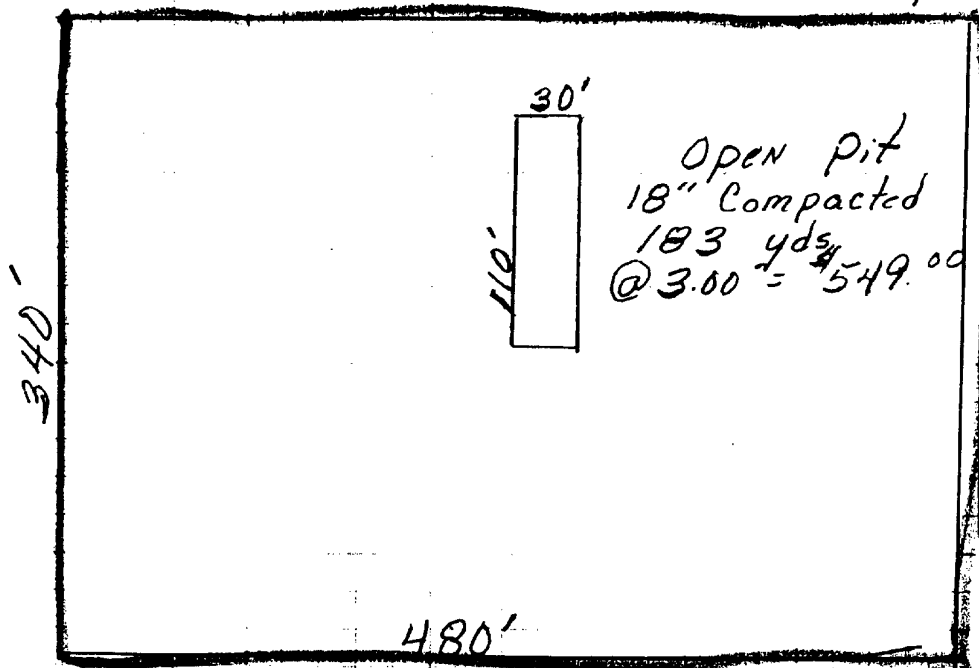
Construction Demolition



1.60 Ac. 1300 sq yds
@ 2.00 yd = \$2601.00
6" inches

18" Compacted
ON .7 Ac 1736 cu yds
@ \$3.00 yd \$5,208.00

Dead Animals pits



3.75 Ac
Top soil
3022 Cu
@ 2.00
\$6,044
6"

**AMCOR-WHITE**

1-800-748-4130
(801) 394-6621
Fax: (801) 626-1315

OGDEN
NORTH SALT LAKE
WEST JORDAN
HURRICANE
LAS VEGAS

Project:	Page:
Location:	Date:
Product:	By:
Client:	Checked:

House Hold

380'

265'

2.3 Ac

18" Compacted

5,594 yds @ 3.00
\$16,782

40" Forest Free
12,494 yds @ 3.00
37,482

Top Soil 6"
1865 yd @ \$2.00
\$3,729.

January 15, 2004

To Whom It May Concern:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations.

Sincerely,

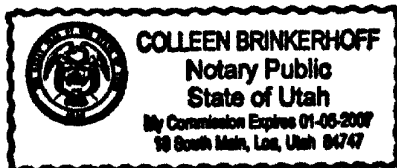
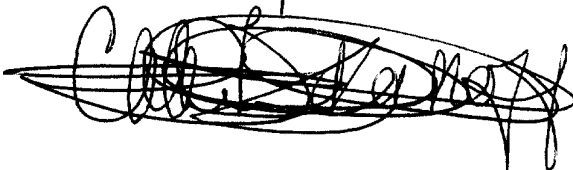


Glenn Okerlund
Chairman, Wayne County Commission

SUBSCRIBED AND SWORN to before me this 14th day of January, 2004.

My commission expires on the 5th day of January, 2007.

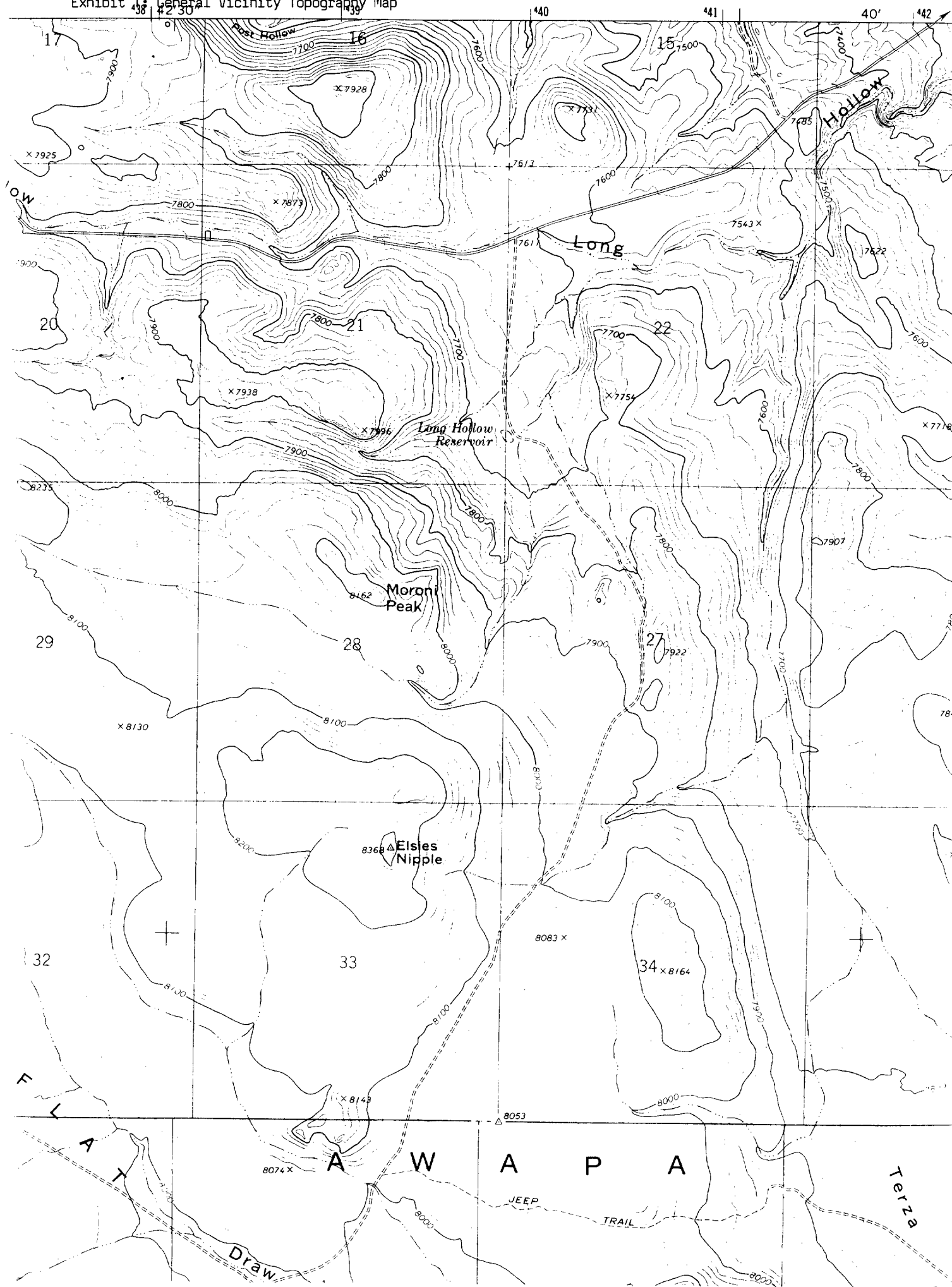
SEAL Wayne County, Utah.



EXHIBITS

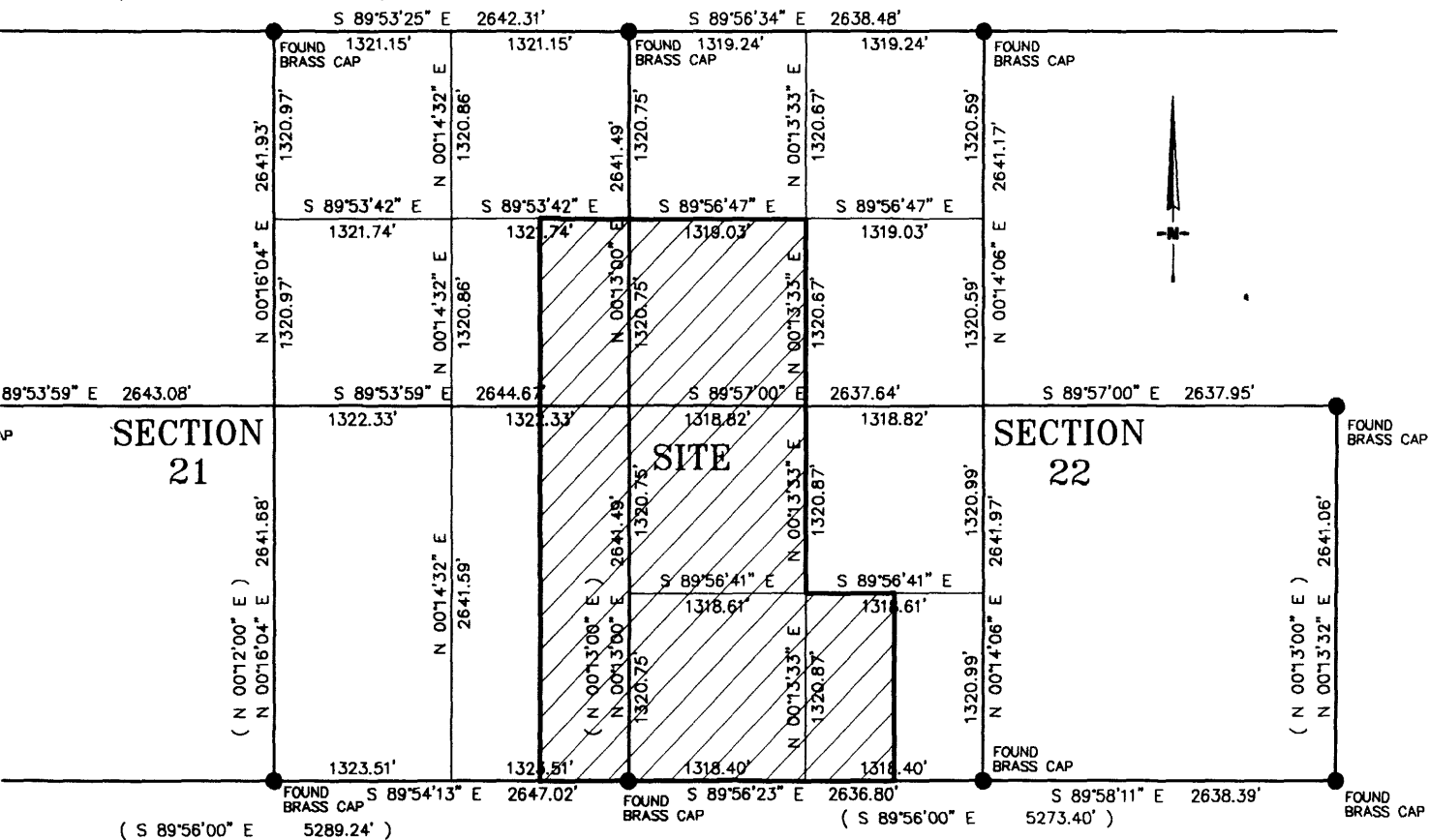
Exhibit 1:	General Vicinity Topography Map
Exhibit 2:	Landfill Survey Map
Exhibit 3A:	Landfill Roads, Drainage and Fencing
Exhibit 3B:	Landfill Typical Sections and Details
Exhibit 3C:	Landfill Cell Cross Sections
Exhibit 3D:	Landfill Site Development Plan
Exhibit 3E:	Landfill Overall Site Plan
Exhibit 4:	“Weighed on Fairbanks Scale” Receipt
Exhibit 5:	Daily Operating Record
Exhibit 6:	Waste Load Inspection Form
Exhibit 7:	Quarterly Inspection Form
Exhibit 8:	On-Site Soil Data
Exhibits 9A - 9D:	Wells and Water Rights
Exhibit 10:	Leachate Characteristics
Exhibits 11A - 11C:	Water Balance Calculations
Exhibit 12:	Brown Brothers Cost Estimate for Landfill Cover Costs
Exhibit 13:	State Treasurer Account Information

Exhibit 1: General Vicinity Topography Map



(S 89°56'00" E 5280.66')

(S 89°57'00" E 5274.72')

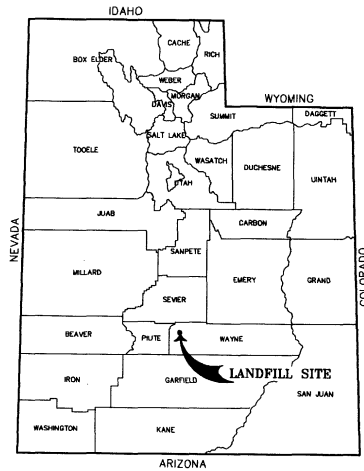


SECTION BREAKDOWN

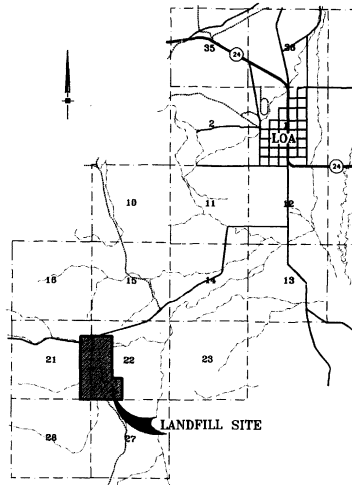
Wayne County Landfill Site

Roads, Drainage & Fencing

2003



LOCATION MAP



INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	TYPICAL SECTIONS & DETAILS
3	CELL CROSS SECTIONS
4	OVERALL SITE PLAN
5	SITE DEVELOPMENT PLAN

APPROVAL

RECOMMENDED FOR APPROVAL:

ENGINEER DATE

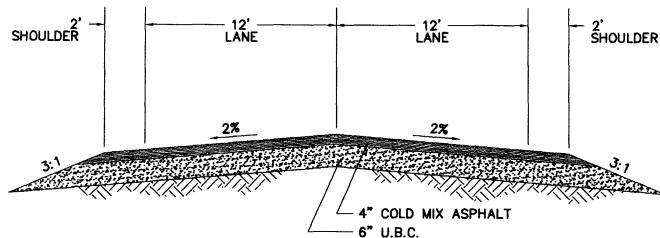
APPROVED:

DATE



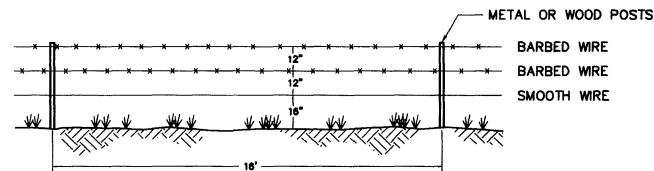
Jones & DeMille Engineering

1440 SOUTH PIPE LANE
Richfield, Utah 84701
(435) 896-8266
Fax (435) 896-8268

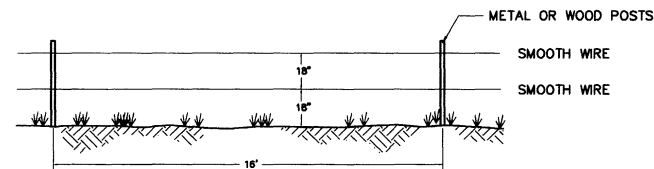


TYPICAL #1

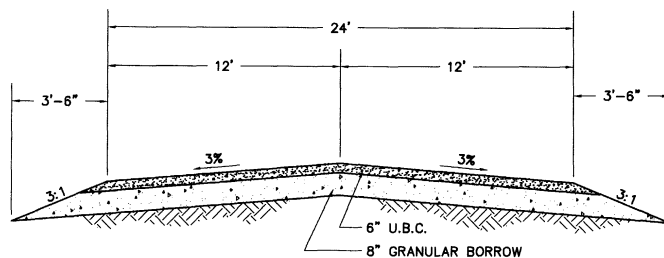
LANDFILL ACCESS ROAD
DESIGN SPEED: 30 mph



**3-STRAND WIRE
BIG GAME FENCE**



2-STRAND WIRE FENCE



TYPICAL #2

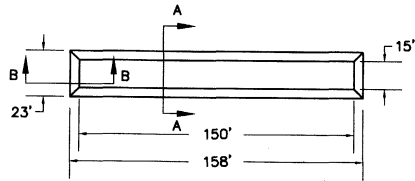
LANDFILL ON-SITE ROADWAY



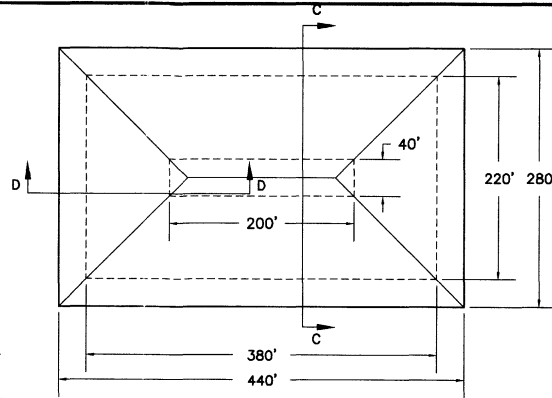
Jones & DeMille Engineering
1440 South Pipe Lane - Richfield, Utah 84701
Phone (435) 896-8266
Fax (435) 896-8268

**WAYNE COUNTY LANDFILL
TYPICAL SECTIONS & DETAILS**

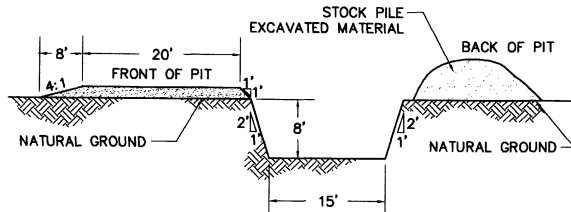
ENGINEER T.D.D.	DRAWN J.L.A.	SHEET NO.
CHECKED K.B.M.	PROJ.# 0303-041 DWG.NM: TYP-SEC	2
SCALE AS NOTED	DATE 03/24/2003	



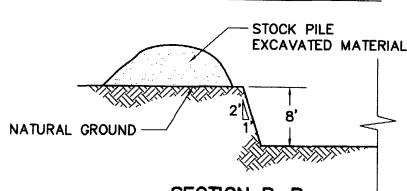
CLASS IV LANDFILL PITS



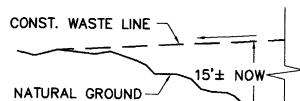
CLASS II LANDFILL PITS



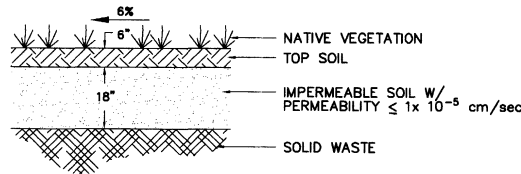
SECTION A-A



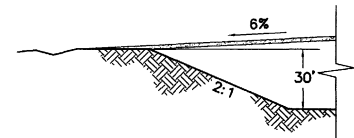
SECTION B-B



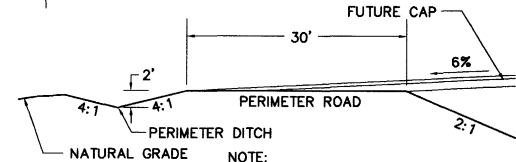
CONSTRUCTION WASTE PIT SECTION



CAP DETAIL



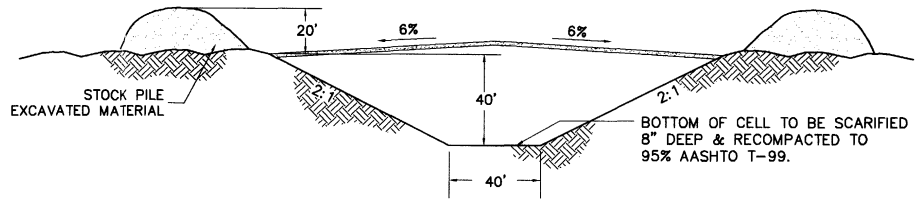
SECTION D-D



- NOTE:
1. GRADE CELL PERIMETER DITCHES TO DRAIN AWAY FROM CELL

CELL BERM DETAIL

(RUN-ON/RUN-OFF CONTROL)



SECTION C-C



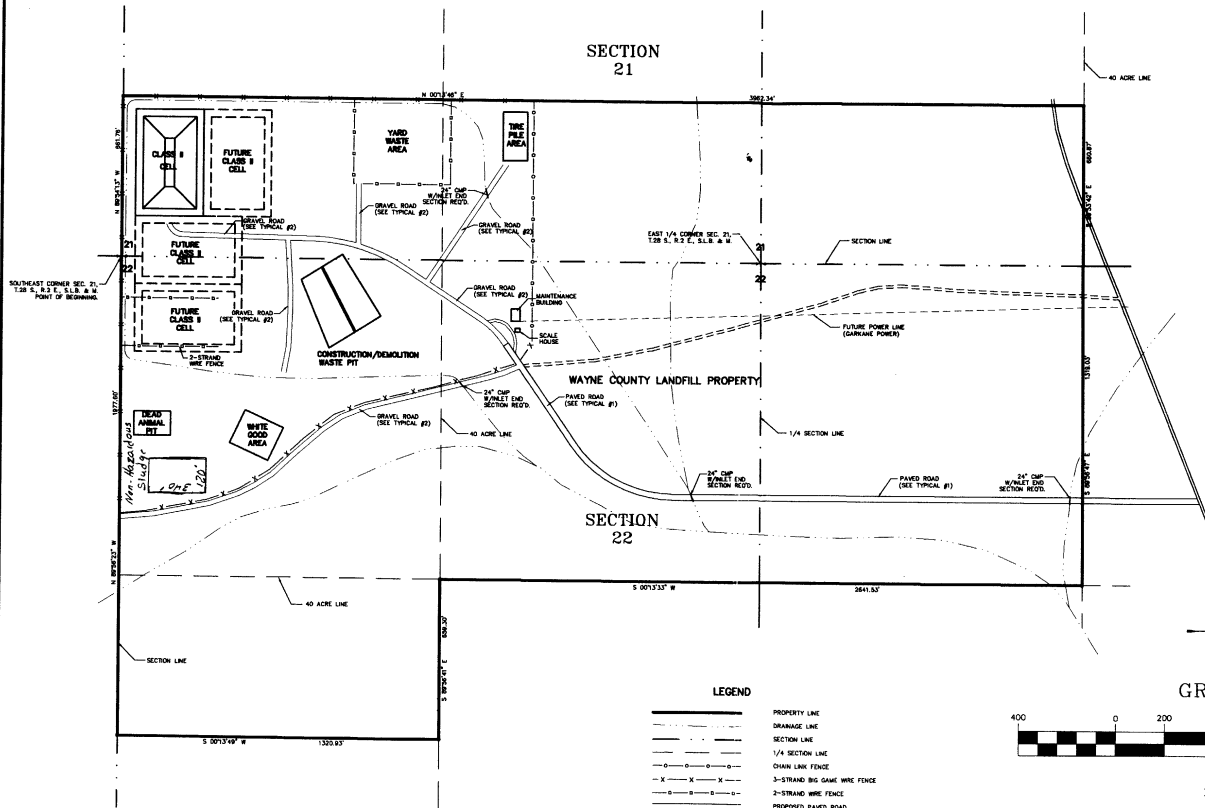
Jones & DeMille Engineering
1440 South Pipe Lane - Richfield, Utah 84701
Phone (435) 896-8268
Fax (435) 896-8268

**WAYNE COUNTY LANDFILL
CELL CROSS SECTIONS**

ENGINEER	T.D.D.	DRAWN	J.L.A.	SHEET NO.
CHECKED	K.B.M.	PROJ.#	0303-041	3
SCALE	AS NOTED	DWG.NM	CELL-SEC	
		DATE	03/24/2003	

SECTION 21

SECTION 22



LEGEND

---	PROPERTY LINE
- - -	DRAINAGE LINE
- - -	SECTION LINE
- - -	1/4 SECTION LINE
- - -	CHAIN LINK FENCE
- X - X - X -	3-STRAND BIG GAME WIRE FENCE
- - -	2-STRAND WIRE FENCE
- - -	PROPOSED PAVED ROAD
- - -	PROPOSED GRAVEL ROAD
- - -	EXISTING ROAD

GRAPHIC SCALE



(IN FEET)
1 inch = 400 ft.



Jones & DeMille Engineering
1440 South Pipe Lane - Richfield, Utah 84701
Phone (435) 896-8268
Fax (435) 896-8268

WAYNE COUNTY LANDFILL OVERALL SITE PLAN

ENGINEER T.D.D.	DRAWN J.L.A.	SHEET NO.
CHECKED K.B.M.	PROJ.#: 0303-041 DWG.#: OVERALL	4
SCALE 1"=400'	DATE 03/25/2003	

WEIGHED ON A FAIRBANKS SCALE

CUSTOMER'S NAME _____

ADDRESS _____

COMMODITY _____

CARRIER _____

INBOUND DATE _____ TIME _____

OUTBOUND DATE _____ TIME _____

DRIVER ON _____ OFF _____

SHIPPER _____

WEIGHER _____

FAIRBANKS SCALE CAT. 16288

WAYNE COUNTY LONG HOLLOW LANDFILL

DAILY OPERATING RECORD:

WASTE ORIGIN
LOA, FREMONT

WASTE ORIGIN																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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DAILY OPERATING RECORD:

WAYNE COUNTY LONG HOLLOW LANDFILL

DATE

OPERATOR

WASTE ORIGIN

LOA, FREMONT

TOTAL WEIGHT

TOTAL VOLUME

WASTE TYPE

TOTAL WEIGHT

TOTAL VOLUME

TOTAL LOADS

NO. WASTE INSPECTIONS

	COUNTY TRUCK				HOUSEHOLD				
	NO. LARGE TRUCKS				CONSTRUCTION DEBRIS				
	NO. PICKUPS				YARD WASTE				
	NO. CARS				DEAD ANIMALS				
					TIRES				
					METALS				
BICKNELL, LYMAN	COUNTY TRUCK				HOUSEHOLD				
	NO. LARGE TRUCKS				CONSTRUCTION DEBRIS				
	NO. PICKUPS				YARD WASTE				
	NO. CARS				DEAD ANIMALS				
					TIRES				
					METALS				
TEASDALE, TORREY	COUNTY TRUCK				HOUSEHOLD				
	NO. LARGE TRUCKS				CONSTRUCTION DEBRIS				
	NO. PICKUPS				YARD WASTE				
	NO. CARS				DEAD ANIMALS				
					TIRES				
					METALS				
CAINEVILLE, HINKSVILLE	COUNTY TRUCK				HOUSEHOLD				
	NO. LARGE TRUCKS				CONSTRUCTION DEBRIS				
	NO. PICKUPS				YARD WASTE				
	NO. CARS				DEAD ANIMALS				
					TIRES				
					METALS				
CAPITO REEF NATIONAL PARK	COUNTY TRUCK				HOUSEHOLD				
	NO. LARGE TRUCKS				CONSTRUCTION DEBRIS				
	NO. PICKUPS				YARD WASTE				
	NO. CARS				DEAD ANIMALS				
					TIRES				
					METALS				
OTHER (FED/STATE LANDS)	COUNTY TRUCK				HOUSEHOLD				
	NO. LARGE TRUCKS				CONSTRUCTION DEBRIS				
	NO. PICKUPS				YARD WASTE				
	NO. CARS				DEAD ANIMALS				
					TIRES				
					METALS				
					HOUSEHOLD				
	NO. LARGE TRUCKS				CONSTRUCTION DEBRIS				
	NO. PICKUPS				YARD WASTE				
	NO. CARS				DEAD ANIMALS				
					TIRES				
					METALS				
					TOTALS				

DAILY OPERATING RECORD:

WAYNE COUNTY LONG HOLLOW LANDFILL

WASTE ORIGIN

DATE

OPERATOR

LOA, FREMONT

TOTAL WEIGHT

TOTAL VOLUME

WASTE TYPE

TOTAL WEIGHT

TOTAL VOLUME

TOTAL LOADS

NO. WASTE INSPECTIONS

LOA, FREMONT	COUNTY TRUCK				HOUSEHOLD				
	NO. LARGE TRUCKS				CONSTRUCTION DEBRIS				
	NO. PICKUPS				YARD WASTE				
	NO. CARS				DEAD ANIMALS				
					TIRES				
BICKNELL, LYMAN	COUNTY TRUCK				METALS				
	NO. LARGE TRUCKS				HOUSEHOLD				
	NO. PICKUPS				CONSTRUCTION DEBRIS				
	NO. CARS				YARD WASTE				
					DEAD ANIMALS				
TEASDALE, TORREY	COUNTY TRUCK				TIRES				
	NO. LARGE TRUCKS				METALS				
	NO. PICKUPS				HOUSEHOLD				
	NO. CARS				CONSTRUCTION DEBRIS				
					YARD WASTE				
CAINEVILLE, HANNSVILLE	COUNTY TRUCK				DEAD ANIMALS				
	NO. LARGE TRUCKS				TIRES				
	NO. PICKUPS				METALS				
	NO. CARS				HOUSEHOLD				
					CONSTRUCTION DEBRIS				
CAPITOL REEF NATIONAL PARK	COUNTY TRUCK				YARD WASTE				
	NO. LARGE TRUCKS				DEAD ANIMALS				
	NO. PICKUPS				TIRES				
	NO. CARS				METALS				
					HOUSEHOLD				
OTHER (FED/STATE LANDS)	COUNTY TRUCK				CONSTRUCTION DEBRIS				
	NO. LARGE TRUCKS				YARD WASTE				
	NO. PICKUPS				DEAD ANIMALS				
	NO. CARS				TIRES				
					METALS				
	COUNTY TRUCK				HOUSEHOLD				
	NO. LARGE TRUCKS				CONSTRUCTION DEBRIS				
	NO. PICKUPS				YARD WASTE				
	NO. CARS				DEAD ANIMALS				
					TIRES				
	COUNTY TRUCK				METALS				
	NO. LARGE TRUCKS				HOUSEHOLD				
	NO. PICKUPS				CONSTRUCTION DEBRIS				
	NO. CARS				YARD WASTE				
					DEAD ANIMALS				
	COUNTY TRUCK				TIRES				
	NO. LARGE TRUCKS				METALS				
	NO. PICKUPS				HOUSEHOLD				
	NO. CARS				CONSTRUCTION DEBRIS				
					YARD WASTE				
	COUNTY TRUCK				DEAD ANIMALS				
	NO. LARGE TRUCKS				TIRES				
	NO. PICKUPS				METALS				
	NO. CARS				HOUSEHOLD				
					CONSTRUCTION DEBRIS				
	COUNTY TRUCK				YARD WASTE				
	NO. LARGE TRUCKS				DEAD ANIMALS				
	NO. PICKUPS				TIRES				
	NO. CARS				METALS				
					HOUSEHOLD				
	COUNTY TRUCK				CONSTRUCTION DEBRIS				
	NO. LARGE TRUCKS				YARD WASTE				
	NO. PICKUPS				DEAD ANIMALS				
	NO. CARS				TIRES				
					METALS				
	COUNTY TRUCK				HOUSEHOLD				
	NO. LARGE TRUCKS				CONSTRUCTION DEBRIS				
	NO. PICKUPS				YARD WASTE				
	NO. CARS				DEAD ANIMALS				
					TIRES				
	COUNTY TRUCK				METALS				
	NO. LARGE TRUCKS				HOUSEHOLD				
	NO. PICKUPS				CONSTRUCTION DEBRIS				
	NO. CARS				YARD WASTE				
					DEAD ANIMALS				
	COUNTY TRUCK				TIRES				
	NO. LARGE TRUCKS				METALS				
	NO. PICKUPS				HOUSEHOLD				
	NO. CARS				CONSTRUCTION DEBRIS				
					YARD WASTE				
	COUNTY TRUCK				DEAD ANIMALS				
	NO. LARGE TRUCKS				TIRES				
	NO. PICKUPS				METALS				
	NO. CARS				HOUSEHOLD				
					CONSTRUCTION DEBRIS				
	COUNTY TRUCK				YARD WASTE				
	NO. LARGE TRUCKS				DEAD ANIMALS				
	NO. PICKUPS				TIRES				
	NO. CARS				METALS				
					HOUSEHOLD				
	COUNTY TRUCK				CONSTRUCTION DEBRIS				
	NO. LARGE TRUCKS				YARD WASTE				
	NO. PICKUPS				DEAD ANIMALS				
	NO. CARS				TIRES				
					METALS				
	COUNTY TRUCK				HOUSEHOLD				
	NO. LARGE TRUCKS				CONSTRUCTION DEBRIS				
	NO. PICKUPS				YARD WASTE				
	NO. CARS				DEAD ANIMALS				
					TIRES				
	COUNTY TRUCK				METALS				
	NO. LARGE TRUCKS				HOUSEHOLD				
	NO. PICKUPS				CONSTRUCTION DEBRIS				
	NO. CARS				YARD WASTE				
					DEAD ANIMALS				
	COUNTY TRUCK				TIRES				
	NO. LARGE TRUCKS				METALS				
	NO. PICKUPS				HOUSEHOLD				
	NO. CARS				CONSTRUCTION DEBRIS				
					YARD WASTE				
	COUNTY TRUCK				DEAD ANIMALS				
	NO. LARGE TRUCKS				TIRES				
	NO. PICKUPS				METALS				
	NO. CARS				HOUSEHOLD				
					CONSTRUCTION DEBRIS				
	COUNTY TRUCK				YARD WASTE				
	NO. LARGE TRUCKS				DEAD ANIMALS				
	NO. PICKUPS				TIRES				
	NO. CARS				METALS				
					HOUSEHOLD				
	COUNTY TRUCK				CONSTRUCTION DEBRIS				
	NO. LARGE TRUCKS				YARD WASTE				
	NO. PICKUPS				DEAD ANIMALS				
	NO. CARS				TIRES				
					METALS				
	COUNTY TRUCK				HOUSEHOLD				
	NO. LARGE TRUCKS				CONSTRUCTION DEBRIS				
	NO. PICKUPS				YARD WASTE				
	NO. CARS				DEAD ANIMALS				
					TIRES				
	COUNTY TRUCK				METALS				
	NO. LARGE TRUCKS				HOUSEHOLD				
	NO. PICKUPS				CONSTRUCTION DEBRIS				
	NO. CARS				YARD WASTE				
					DEAD ANIMALS				
	COUNTY TRUCK				TIRES				
	NO. LARGE TRUCKS				METALS				
	NO. PICKUPS				HOUSEHOLD				
	NO. CARS				CONSTRUCTION DEBRIS				
					YARD WASTE				
	COUNTY TRUCK				DEAD ANIMALS				
	NO. LARGE TRUCKS				TIRES				
	NO. PICKUPS				METALS				
	NO. CARS				HOUSEHOLD				
					CONSTRUCTION DEBRIS				
	COUNTY TRUCK				YARD WASTE				
	NO. LARGE TRUCKS				DEAD ANIMALS				
	NO. PICKUPS				TIRES				
	NO. CARS				METALS				
					HOUSEHOLD				
	COUNTY TRUCK				CONSTRUCTION DEBRIS				
	NO. LARGE TRUCKS				YARD WASTE				
	NO. PICKUPS				DEAD ANIMALS				
	NO. CARS				TIRES				
					METALS				
	COUNTY TRUCK				HOUSEHOLD				
	NO. LARGE TRUCKS				CONSTRUCTION DEBRIS				
	NO. PICKUPS				YARD WASTE				
	NO. CARS				DEAD ANIMALS				
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	NO. LARGE TRUCKS				HOUSEHOLD				
	NO. PICKUPS				CONSTRUCTION DEBRIS				
	NO. CARS				YARD WASTE				
					DEAD ANIMALS				
	COUNTY TRUCK				TIRES				
	NO. LARGE TRUCKS				METALS				
	NO. PICKUPS				HOUSEHOLD				
	NO. CARS				CONSTRUCTION DEBRIS				
					YARD WASTE				
	COUNTY TRUCK				DEAD ANIMALS				
	NO. LARGE TRUCKS				TIRES				
	NO. PICKUPS				METALS				
	NO. CARS				HOUSEHOLD				
					CONSTRUCTION DEBRIS				
	COUNTY TRUCK				YARD WASTE				
	NO. LARGE TRUCKS				DEAD ANIMALS				
	NO. PICKUPS				TIRES				
	NO. CARS				METALS				
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	COUNTY TRUCK				CONSTRUCTION DEBRIS				
	NO. LARGE TRUCKS				YARD WASTE				
	NO. PICKUPS				DEAD ANIMALS				
	NO. CARS				TIRES				
					METALS				
	COUNTY TRUCK				HOUSEHOLD				
	NO. LARGE TRUCKS				CONSTRUCTION DEBRIS				
	NO. PICKUPS				YARD WASTE				
	NO. CARS				DEAD ANIMALS				
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	COUNTY TRUCK				METALS				
	NO. LARGE TRUCKS				HOUSEHOLD				
	NO. PICKUPS				CONSTRUCTION DEBRIS				
	NO. CARS				YARD WASTE				
					DEAD ANIMALS				
	COUNTY TRUCK				TIRES				
	NO. LARGE TRUCKS				METALS				
	NO. PICKUPS				HOUSEHOLD				
	NO. CARS				CONSTRUCTION DEBRIS				
					YARD WASTE				
	COUNTY TRUCK				DEAD ANIMALS				
	NO. LARGE TRUCKS				TIRES				
	NO. PICKUPS				METALS				
	NO. CARS				HOUSEHOLD				
					CONSTRUCTION DEBRIS				
	COUNTY TRUCK				YARD WASTE				
	NO. LARGE TRUCKS				DEAD ANIMALS				
	NO. PICKUPS				TIRES				
	NO. CARS				METALS				
					HOUSEHOLD				
	COUNTY TRUCK				CONSTRUCTION DEBRIS				
	NO. LARGE TRUCKS				YARD WASTE				
	NO. PICKUPS				DEAD ANIMALS				
	NO. CARS				TIRES				
					METALS				
	COUNTY TRUCK				HOUSEHOLD				
	NO. LARGE TRUCKS				CONSTRUCTION DEBRIS				
	NO. PICKUPS				YARD WASTE				
	NO. CARS				DEAD ANIMALS				
					TIRES				
	COUNTY TRUCK				METALS				
	NO. LARGE TRUCKS				HOUSEHOLD				
	NO. PICKUPS				CONSTRUCTION DEBRIS				
	NO. CARS				YARD WASTE				
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	COUNTY TRUCK				TIRES				
	NO. LARGE TRUCKS				METALS				
	NO. PICKUPS				HOUSEHOLD				
	NO. CARS				CONSTRUCTION DEBRIS				
					YARD WASTE				
	COUNTY TRUCK				DEAD ANIMALS				
	NO. LARGE TRUCKS				TIRES				
	NO. PICKUPS				METALS				
	NO. CARS				HOUSEHOLD				
					CONSTRUCTION DEBRIS				
	COUNTY TRUCK				YARD WASTE				
	NO. LARGE TRUCKS				DEAD ANIMALS				
	NO. PICKUPS				TIRES				
	NO. CARS				METALS				
					HOUSEHOLD				
	COUNTY TRUCK				CONSTRUCTION DEBRIS				
	NO. LARGE TRUCKS				YARD WASTE				
	NO. PICKUPS				DEAD ANIMALS				
	NO. CARS				TIRES				
					METALS				
	COUNTY TRUCK				HOUSEHOLD				
	NO. LARGE TRUCKS				CONSTRUCTION DEBRIS				
	NO. PICKUPS				YARD WASTE				
	NO. CARS				DEAD ANIMALS				
					TIRES				
</									

WASTE INSPECTION FORM

WAYNE COUNTY LANDFILL SOLID WASTE DISPOSAL SITE WASTE INSPECTION FORM

Date _____ Time _____ Truck _____

Hauler _____ License Plate # _____

Source of Waste (Generator) _____

Type of Waste _____

Driver's Name _____ Driver's Signature _____

Type of recyclable material found in load:

Cardboard	<input type="checkbox"/>	Plastics	<input type="checkbox"/>	Newsprint	<input type="checkbox"/>
Metal	<input type="checkbox"/>	Boxboard	<input type="checkbox"/>	Glass	<input type="checkbox"/>
Office Paper	<input type="checkbox"/>	Other	<input type="checkbox"/>		

Is there hazardous waste, dangerous goods or other prohibited waste in the load?

☐ No - no further action, sign form ☐ Yes - record type of waste

Type of hazardous waste prohibited materials found in load:

Propane Cylinders	<input type="checkbox"/>	Oil	<input type="checkbox"/>	Other	<input type="checkbox"/>
Automotive Batteries	<input type="checkbox"/>	Paint Cans	<input type="checkbox"/>	Other	<input type="checkbox"/>

Description of Waste _____

Actions Taken _____

Inspector's Signature _____ Date _____

Any waste suspected to be a regulated hazardous waste will be reported to the Red Deer Regional Health Unit and the Alberta Environment Protection's Pollution Control Division.

WAYNE COUNTY LANDFILL QUARTERLY INSPECTION FORM

Performed by _____ Date _____

		Overall Condition	
		Satisfactory	Needs Work*
I. Structures and Roads			
1.	Buildings	<input type="checkbox"/>	<input type="checkbox"/>
2.	Fences	<input type="checkbox"/>	<input type="checkbox"/>
3.	Gates	<input type="checkbox"/>	<input type="checkbox"/>
4.	Road leading to facility	<input type="checkbox"/>	<input type="checkbox"/>
5.	Inside perimeter road	<input type="checkbox"/>	<input type="checkbox"/>
6.	Gas monitor levels	<input type="checkbox"/>	<input type="checkbox"/>

*Specify recommended repairs and/or list actions taken: _____

II. Operations

1.	Litter and weed control	<input type="checkbox"/>	<input type="checkbox"/>
2.	Excavations	<input type="checkbox"/>	<input type="checkbox"/>
3.	Daily cover	<input type="checkbox"/>	<input type="checkbox"/>
4.	Final cover	<input type="checkbox"/>	<input type="checkbox"/>
5.	Waste Piles		
	A. Appliances	<input type="checkbox"/>	<input type="checkbox"/>
	B. Construction/Demolition	<input type="checkbox"/>	<input type="checkbox"/>
	C. Tires	<input type="checkbox"/>	<input type="checkbox"/>
	D. Inert waste	<input type="checkbox"/>	<input type="checkbox"/>
	E. Car bodies	<input type="checkbox"/>	<input type="checkbox"/>
	F. Yard waste	<input type="checkbox"/>	<input type="checkbox"/>
6.	Recyclables/Furniture storage area	<input type="checkbox"/>	<input type="checkbox"/>

*Specify recommended repairs and/or list actions taken: _____

**SOUTHWEST TESTING**

April 4, 1994

Mr. Ted Taylor, Road Supervisor
Wayne County
18 S. Main Street
Loa, UT 84747

RE: Permeability results

Dear Ted:

In accordance with your request, our organization has determined the permeability rate of the sample you delivered to our office. The permeability rate was established from a sample remolded to 95 percent of the maximum laboratory density and at optimum moisture as prescribed in ASTM 698.

The sample had a dry density of 106.5 pounds per cubic foot at 17.6 percent moisture. The permeability rate is 2.98 feet per year or 1.91×10^{-4} centimeters per second.

If you should have any questions concerning the information contained in this letter or if we can be of further assistance, please call me at (801) 673-6850.

Sincerely,
SOUTHWEST TESTING, INC.

Glenn N. Waite

LONG HOLLOW SANITARY LANDFILL

Exhibit 8: On-Site Soil Data



April 4, 1994

Mr. Ted Taylor, Road Supervisor
Wayne County
18 S. Main Street
Loa, UT 84747

RE: Permeability results

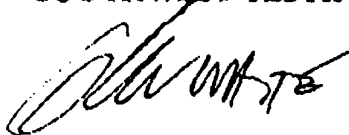
Dear Ted:

In accordance with your request, our organization has determined the permeability rate of the sample you delivered to our office. The permeability rate was established from a sample remolded to 95 percent of the maximum laboratory density and at optimum moisture as prescribed in ASTM 698.

The sample had a dry density of 106.5 pounds per cubic foot at 17.6 percent moisture. The permeability rate is 2.98 feet per year or 1.91×10^{-4} centimeters per second.

If you should have any questions concerning the information contained in this letter or if we can be of further assistance, please call me at (801) 673-6850.

Sincerely,
SOUTHWEST TESTING, INC.



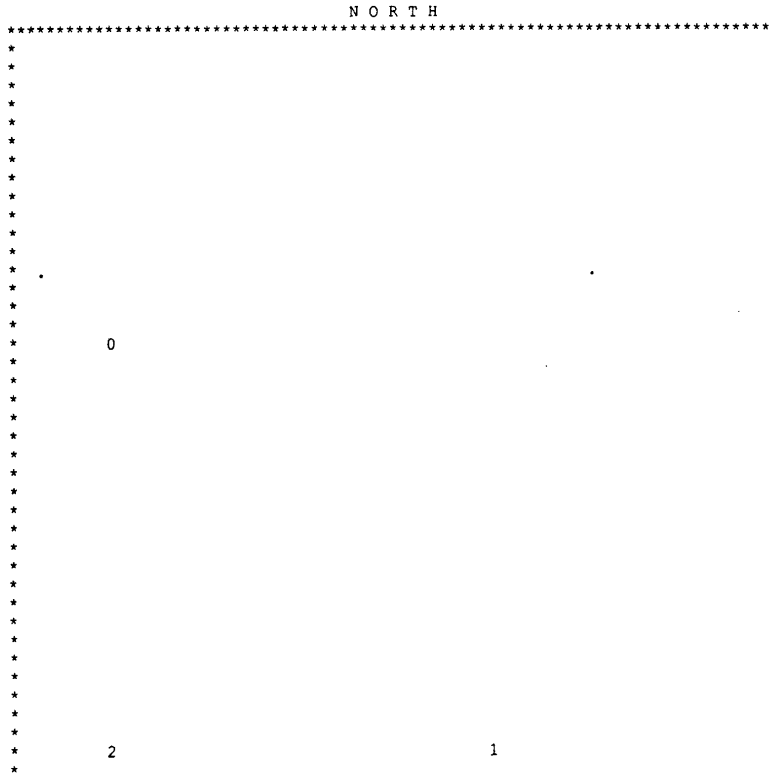
Glenn N. Waite

LONG HOLLOW SANITARY LANDFILL

UTAH DIVISION OF WATER RIGHTS
WATER RIGHT POINT OF DIVERSION PLOT CREATED THU, MAR 20, 2003, 9:33 AM
PLOT SHOWS LOCATION OF 4 POINTS OF DIVERSION

PLOT OF ALL QUARTER(S) IN SECTION 15 TOWNSHIP 28S RANGE 2E SL BASE AND MERIDIAN

PLOT SCALE IS APPROXIMATELY 1 INCH = 1000 FEET



 *
 *
 *

UTAH DIVISION OF WATER RIGHTS
 NWPLAT POINT OF DIVERSION LOCATION PROGRAM

MAP CHAR	WATER RIGHT	QUANTITY CFS	AND/OR AC-FT	SOURCE DESCRIPTION or WELL INFO DIAMETER DEPTH YEAR LOG NORTH EAST	POINT OF DIVERSION DESCRIPTION CNR SEC TWN RNG B&M	U N	A P	P R	T S	S U	P R
0	95 2178	.0000	.00	Post Hollow Creek							
	WATER USE(S): STOCKWATERING					PRIORITY DATE: 00/00/1876					
	USA Bureau of Land Management (Richfield 150 East 900 North					Richfield					
						UT 84701					
0	95 2179	.0000	.00	Unnamed Intermittent Stream							
	WATER USE(S): STOCKWATERING					PRIORITY DATE: 00/00/1876					
	USA Bureau of Land Management (Richfield 150 East 900 North					Richfield					
						UT 84701					
1	95 2188	.0000	.00	Unnamed Intermittent Stream							
	WATER USE(S): STOCKWATERING					PRIORITY DATE: 00/00/1876					
	USA Bureau of Land Management (Richfield 150 East 900 North					Richfield					
						UT 84701					
2	95 2179	.0000	.00	Unnamed Intermittent Stream							
	WATER USE(S): STOCKWATERING					PRIORITY DATE: 00/00/1876					
	USA Bureau of Land Management (Richfield 150 East 900 North					Richfield					
						UT 84701					

UTAH DIVISION OF WATER RIGHTS
WATER RIGHT POINT OF DIVERSION PLOT CREATED THU, MAR 20, 2003, 9:34 AM
PLOT SHOWS LOCATION OF 4 POINTS OF DIVERSION

PLOT OF ALL QUARTER(S) IN SECTION 16 TOWNSHIP 28S RANGE 2E SL BASE AND MERIDIAN

PLOT SCALE IS APPROXIMATELY 1 INCH = 1000 FEET

N O R T H

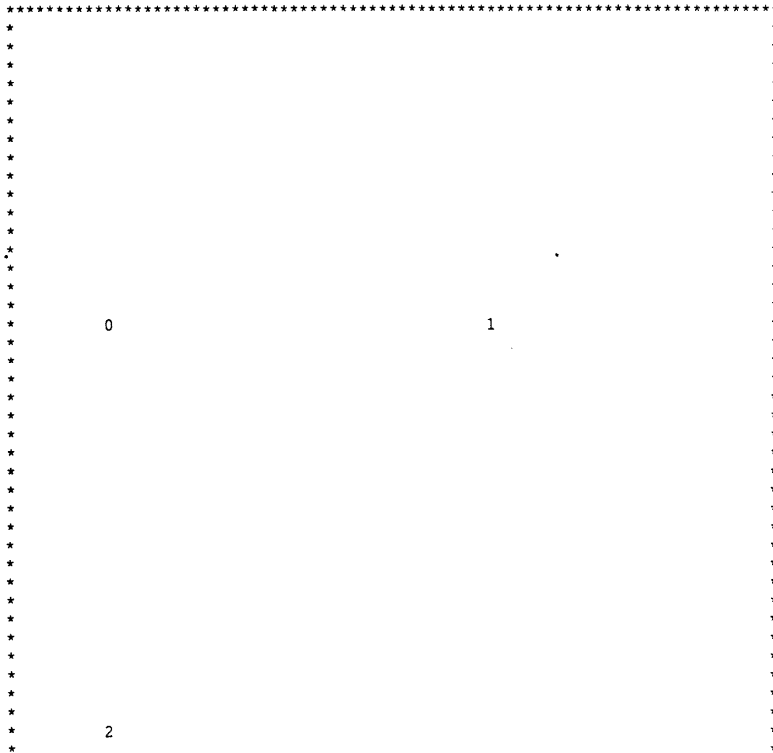


Exhibit 9B: Wells and Water Rights

*
*
*

UTAH DIVISION OF WATER RIGHTS
NWPLAT POINT OF DIVERSION LOCATION PROGRAM

MAP CHAR	WATER RIGHT	QUANTITY CFS	AND/OR AC-FT	SOURCE DESCRIPTION or WELL INFO DIAMETER DEPTH YEAR LOG	POINT OF DIVERSION DESCRIPTION NORTH EAST CNR SEC TWN RNG B&M	U N	A P	P T	S U	P R
0	95 4137	.0000	.00	Unnamed Intermittent Stream						
		WATER USE(S): STOCKWATERING State of Utah School & Institutional Tru 675 East 500 South, 5th Floor				PRIORITY DATE: 00/00/1876 Salt Lake City	UT	84102-2810		
1	95 4137	.0000	.00	Unnamed Intermittent Stream						
		WATER USE(S): STOCKWATERING State of Utah School & Institutional Tru 675 East 500 South, 5th Floor				PRIORITY DATE: 00/00/1876 Salt Lake City	UT	84102-2810		
2	95 4138	.0000	.00	Unnamed Intermittent Stream						
		WATER USE(S): STOCKWATERING State of Utah School & Institutional Tru 675 East 500 South, 5th Floor.				PRIORITY DATE: 00/00/1876 Salt Lake City	UT	84102-2810		
2	95 4138	.0000	.00	Unnamed Intermittent Stream						
		WATER USE(S): STOCKWATERING State of Utah School & Institutional Tru 675 East 500 South, 5th Floor				PRIORITY DATE: 00/00/1876 Salt Lake City	UT	84102-2810		

UTAH DIVISION OF WATER RIGHTS
WATER RIGHT POINT OF DIVERSION PLOT CREATED THU, MAR 20, 2003, 9:34 AM
PLOT SHOWS LOCATION OF 4 POINTS OF DIVERSION

PLOT OF ALL QUARTER(S) IN SECTION 21 TOWNSHIP 28S RANGE 2E SL BASE AND MERIDIAN

PLOT SCALE IS APPROXIMATELY 1 INCH = 1000 FEET

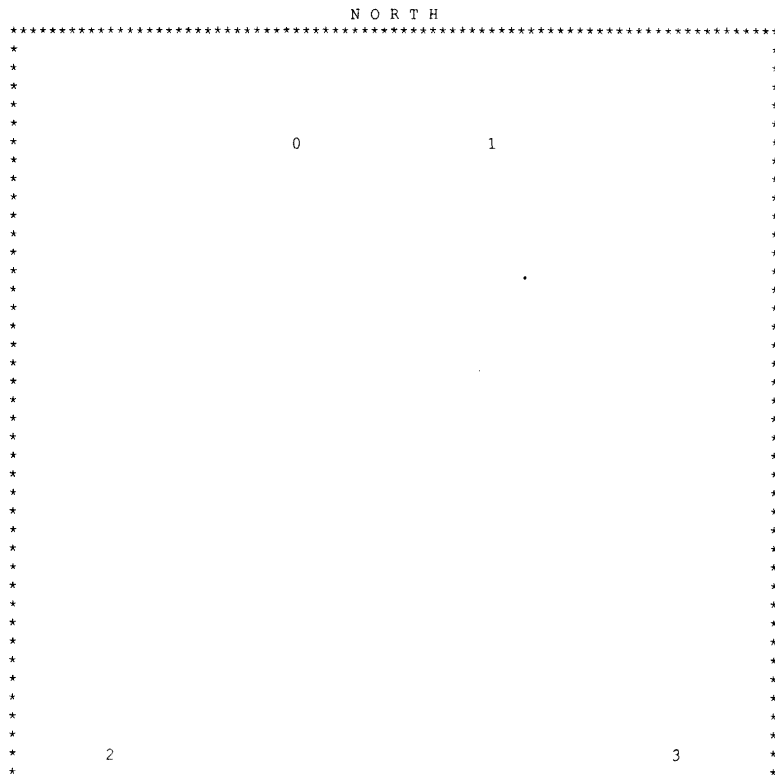


Exhibit 9C: Wells and Water Rights

UTAH DIVISION OF WATER RIGHTS
NWPLAT POINT OF DIVERSION LOCATION PROGRAM

MAP CHAR	WATER RIGHT	CFS	QUANTITY AND/OR AC-FT	SOURCE DESCRIPTION or WELL INFO DIAMETER DEPTH YEAR LOG NORTH	POINT OF DIVERSION DESCRIPTION EAST CNR SEC TWN RNG B&M	U A P T S U P R N P E E U G T E N P R R R W P D
0	95 2175	.0000	.00	Unnamed Intermittent Stream		X X X
	WATER USE(S): STOCKWATERING				PRIORITY DATE: 00/00/1876	
	USA Bureau of Land Management (Richfield 150 East 900 North				Richfield	UT 84701
1	95 2175	.0000	.00	Unnamed Intermittent Stream		X X X
	WATER USE(S): STOCKWATERING				PRIORITY DATE: 00/00/1876	
	USA Bureau of Land Management (Richfield 150 East 900 North				Richfield	UT 84701
2	95 2180	.0000	.00	Unnamed Intermittent Stream		X X X
	WATER USE(S): STOCKWATERING				PRIORITY DATE: 00/00/1876	
	USA Bureau of Land Management (Richfield 150 East 900 North				Richfield	UT 84701
3	95 2190	.0000	.00	Long Hollow Reservoir Stream		X X X
	WATER USE(S): STOCKWATERING				PRIORITY DATE: 00/00/1876	
	USA Bureau of Land Management (Richfield 150 East 900 North				Richfield	UT 84701

UTAH DIVISION OF WATER RIGHTS
WATER RIGHT POINT OF DIVERSION PLOT CREATED THU, MAR 20, 2003, 9:35 AM
PLOT SHOWS LOCATION OF 5 POINTS OF DIVERSION

PLOT OF ALL QUARTER(S) IN SECTION 22 TOWNSHIP 28S RANGE 2E SL BASE AND MERIDIAN

PLOT SCALE IS APPROXIMATELY 1 INCH = 1000 FEET

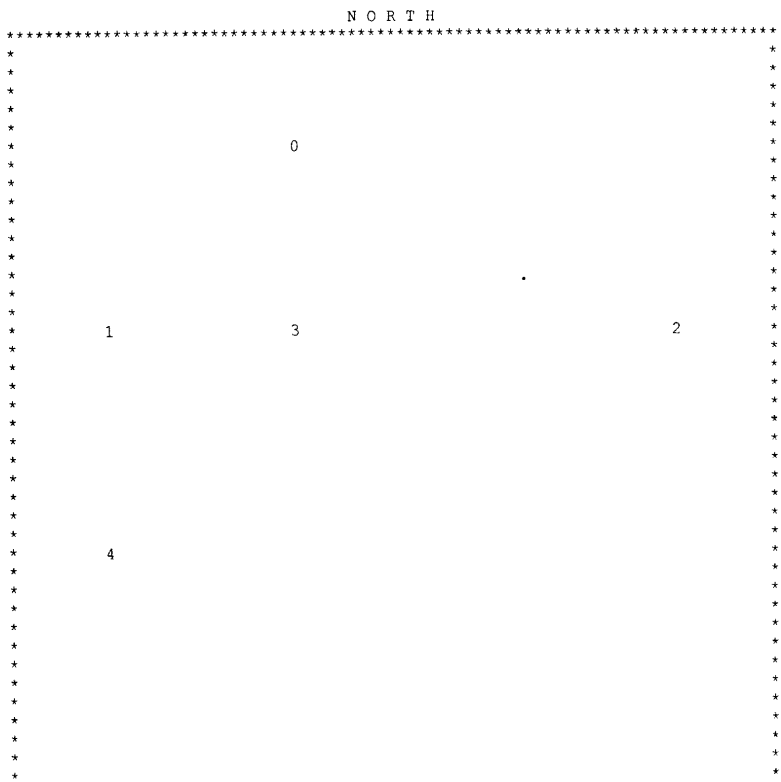


Exhibit 9D: Wells and Water Rights

UTAH DIVISION OF WATER RIGHTS
NWPLAT POINT OF DIVERSION LOCATION PROGRAM

MAP CHAR	WATER RIGHT	CFS	QUANTITY AND/OR AC-FT	SOURCE DESCRIPTION or WELL INFO DIAMETER DEPTH YEAR LOG NORTH EAST	POINT OF DIVERSION DESCRIPTION CNR SEC TWN RNG B&M	U A P T S U P R N P E E U G T E N P R R R W P D
0	95 2188	.0000	.00	Unnamed Intermittent Stream		X X X
	WATER USE(S): STOCKWATERING				PRIORITY DATE: 00/00/1876	
	USA Bureau of Land Management (Richfield 150 East 900 North				Richfield	UT 84701
1	95 2190	.0000	.00	Unnamed Intermittent Stream		X X X
	WATER USE(S): STOCKWATERING				PRIORITY DATE: 00/00/1876	
	USA Bureau of Land Management (Richfield 150 East 900 North				Richfield	UT 84701
2	95 2189	.0000	.00	Unnamed Intermittent Stream		X X X
	WATER USE(S): STOCKWATERING				PRIORITY DATE: 00/00/1876	
	USA Bureau of Land Management (Richfield 150 East 900 North				Richfield	UT 84701
3	95 2186	.0000	.00	Moroni Peak Creek		X X X
	WATER USE(S): STOCKWATERING				PRIORITY DATE: 00/00/1876	
	USA Bureau of Land Management (Richfield 150 East 900 North				Richfield	UT 84701
4	95 2181	.0000	.00	Unnamed Intermittent Stream		X X X
	WATER USE(S): STOCKWATERING				PRIORITY DATE: 00/00/1876	
	USA Bureau of Land Management (Richfield 150 East 900 North				Richfield	UT 84701

TABLE 3.14. Typical Leachate Quality of Municipal Waste*

SI Number ²	Parameter	Overall Range (mg/liter except as indicated)
1	TDS	584-55,000
2	Specific conductance	480-72,500 μ mho/cm
3	Total suspended solids	2-140,900
4	BOD	ND-195,000
5	COD	6.6-99,000
6	TOC	ND-40,000
7	pH	3.7-8.9 units
8	Total alkalinity	ND-15,050
9	Hardness	0.1-225,000
10	Chloride	2-11,375
11	Calcium	3.0-2,500
12	Sodium	12-6,010
13	Total Kjeldahl nitrogen	2-3,320
14	Iron	ND-4,000
15	Potassium	ND-3,200
16	Magnesium	4.0-780
17	Ammonia-nitrogen	ND-1,200
18	Sulfate	ND-1,850
19	Aluminum	ND-85
20	Zinc	ND-731
21	Manganese	ND-400
22	Total phosphorus	ND-234
23	Boron	0.87-13
24	Barium	ND-12.5
25	Nickel	ND-7.5
26	Nitrate-nitrogen	ND-250
27	Lead	ND-14.2
28	Chromium	ND-5.6
29	Antimony	ND-3.19
30	Copper	ND-9.0
31	Thallium	ND-0.78
32	Cyanide	ND-6
33	Arsenic	ND-70.2
34	Molybdenum	0.01-1.43
35	Tin	ND-0.16
36	Nitrite-nitrogen	ND-1.46
37	Selenium	ND-1.85
38	Cadmium	ND-0.4
39	Silver	ND-1.96
40	Beryllium	ND-0.36
41	Mercury	ND-3.0
42	Turbidity	40-500 Jackson units

Based on McGinley and Kmet (1984) and Lu et al. (1981).

*Several bacteria and fungi species and several priority pollutants are found in the leachate.

LONG HOLLOW SANITARY LANDFILL

Exhibit 10: Leachate Characteristics

TABLE 3.14. Typical Leachate Quality of Municipal Waste*

SI Number ^c	Parameter	Overall Range (mg/liter except as indicated)
1	TDS	584-55,000
2	Specific conductance	480-72,500 μ mho/cm
3	Total suspended solids	2-140,900
4	BOD	ND-195,000
5	COD	6.6-99,000
6	TOC	ND-40,000
7	pH	3.7-8.9 units
8	Total alkalinity	ND-15,050
9	Hardness	0.1-225,000
10	Chloride	2-11,375
11	Calcium	3.0-2,500
12	Sodium	12-6,010
13	Total Kjeldahl nitrogen	2-3,320
14	Iron	ND-4,000
15	Potassium	ND-3,200
16	Magnesium	4.0-780
17	Ammonia-nitrogen	ND-1,200
18	Sulfate	ND-1,850
19	Aluminum	ND-85
20	Zinc	ND-731
21	Manganese	ND-400
22	Total phosphorus	ND-234
23	Boron	0.87-13
24	Barium	ND-12.5
25	Nickel	ND-7.5
26	Nitrate-nitrogen	ND-250
27	Lead	ND-14.2
28	Chromium	ND-5.6
29	Antimony	ND-3.19
30	Copper	ND-9.0
31	Thallium	ND-0.78
32	Cyanide	ND-6
33	Arsenic	ND-70.2
34	Molybdenum	0.01-1.43
35	Tin	ND-0.16
36	Nitrite-nitrogen	ND-1.46
37	Selenium	ND-1.85
38	Cadmium	ND-0.4
39	Silver	ND-1.96
40	Beryllium	ND-0.36
41	Mercury	ND-3.0
42	Turbidity	40-500 Jackson units

Based on McGinley and Kmet (1984) and Lu et al. (1981).

*Several bacteria and fungi species and several priority pollutants are found in the leachate.

Exhibit 11A: Water Balance Calculations

LONG HOLLOW LANDFILL
WATER BALANCE CALCULATION
0 - 10 YEARS

BARE GROUND

LAYER 1

VERTICAL PERCOLATION LAYER

THICKNESS	=	3.00 INCHES
POROSITY	=	0.4570 VOL/VOL
FIELD CAPACITY	=	0.0831 VOL/VOL
WILTING POINT	=	0.0326 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0340 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.003100000089 CM/SEC

LAYER 2

VERTICAL PERCOLATION LAYER

THICKNESS	=	3.00 INCHES
POROSITY	=	0.4570 VOL/VOL
FIELD CAPACITY	=	0.0831 VOL/VOL
WILTING POINT	=	0.0326 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0340 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.003100000089 CM/SEC

LAYER 3

VERTICAL PERCOLATION LAYER

THICKNESS	=	6.00 INCHES
POROSITY	=	0.4570 VOL/VOL
FIELD CAPACITY	=	0.0831 VOL/VOL
WILTING POINT	=	0.0326 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0340 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.003100000089 CM/SEC

LAYER 4

VERTICAL PERCOLATION LAYER

THICKNESS	=	120.00 INCHES
-----------	---	---------------

POROSITY	=	0.5200 VOL/VOL
FIELD CAPACITY	=	0.2942 VOL/VOL
WILTING POINT	=	0.1400 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1410 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000199999995 CM/SEC

LAYER 5

VERTICAL PERCOLATION LAYER

THICKNESS	=	12.00 INCHES
POROSITY	=	0.4570 VOL/VOL
FIELD CAPACITY	=	0.0831 VOL/VOL
WILTING POINT	=	0.0326 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0340 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.003100000089 CM/SEC

LAYER 6

VERTICAL PERCOLATION LAYER

THICKNESS	=	120.00 INCHES
POROSITY	=	0.5200 VOL/VOL
FIELD CAPACITY	=	0.2942 VOL/VOL
WILTING POINT	=	0.1400 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1410 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000199999995 CM/SEC

LAYER 7

VERTICAL PERCOLATION LAYER

THICKNESS	=	12.00 INCHES
POROSITY	=	0.4570 VOL/VOL
FIELD CAPACITY	=	0.0831 VOL/VOL
WILTING POINT	=	0.0326 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0340 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.003100000089 CM/SEC

LAYER 8

VERTICAL PERCOLATION LAYER

THICKNESS	=	120.00 INCHES
POROSITY	=	0.5200 VOL/VOL
FIELD CAPACITY	=	0.2942 VOL/VOL
WILTING POINT	=	0.1400 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1410 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000199999995 CM/SEC

LAYER 9

VERTICAL PERCOLATION LAYER

THICKNESS	=	120.00 INCHES
POROSITY	=	0.3509 VOL/VOL
FIELD CAPACITY	=	0.0705 VOL/VOL
WILTING POINT	=	0.0326 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0340 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000155000002 CM/SEC

LAYER 10

VERTICAL PERCOLATION LAYER

THICKNESS	=	120.00 INCHES
POROSITY	=	0.3509 VOL/VOL
FIELD CAPACITY	=	0.0705 VOL/VOL
WILTING POINT	=	0.0326 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0340 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000155000002 CM/SEC

LAYER 11

VERTICAL PERCOLATION LAYER

THICKNESS	=	120.00 INCHES
POROSITY	=	0.3509 VOL/VOL
FIELD CAPACITY	=	0.0705 VOL/VOL
WILTING POINT	=	0.0326 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0340 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000155000002 CM/SEC

LAYER 12

VERTICAL PERCOLATION LAYER

THICKNESS	=	120.00 INCHES
POROSITY	=	0.3509 VOL/VOL
FIELD CAPACITY	=	0.0705 VOL/VOL
WILTING POINT	=	0.0326 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0340 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000155000002 CM/SEC

GENERAL SIMULATION DATA

SCS RUNOFF CURVE NUMBER	=	80.26
TOTAL AREA OF COVER	=	60000. SQ FT

SOIL WATER CONTENT INITIALIZED BY USER.

MAXIMUM LEAF AREA INDEX = 3.00
START OF GROWING SEASON (JULIAN DATE) = 138
END OF GROWING SEASON (JULIAN DATE) = 276

NORMAL MEAN MONTHLY TEMPERATURES, DEGREES FAHRENHEIT

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
23.60	27.80	32.90	40.80	50.00	58.40
64.80	62.40	55.00	45.10	32.70	24.30

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 10

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.50 1.02	0.31 1.24	0.31 0.49	0.40 0.52	0.36 0.45	0.55 0.56
STD. DEVIATIONS	0.36 0.98	0.17 0.58	0.07 0.50	0.25 0.47	0.36 0.35	0.40 0.28
RUNOFF						
TOTALS	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000
STD. DEVIATIONS	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000

EVAPOTRANSPIRATION

TOTALS	0.521	0.479	0.369	0.298	0.302	0.746
	1.094	1.116	0.545	0.425	0.353	0.440
STD. DEVIATIONS	0.239	0.367	0.063	0.143	0.242	0.519
	0.913	0.529	0.425	0.389	0.214	0.204

PERCOLATION FROM LAYER 12

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 10

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	6.72 (1.722)	33605.	100.00
RUNOFF	0.000 (0.000)	0.	0.00
EVAPOTRANSPIRATION	6.689 (1.797)	33443.	99.52
PERCOLATION FROM LAYER 12	0.0000 (0.0000)	0.	0.00
CHANGE IN WATER STORAGE	0.032 (0.265)	162.	0.48

PEAK DAILY VALUES FOR YEARS 1 THROUGH 10

	(INCHES)	(CU. FT.)
PRECIPITATION	1.59	7950.0
RUNOFF	0.000	0.0
PERCOLATION FROM LAYER 12	0.0000	0.0
SNOW WATER	0.96	4789.8
MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.1546	
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0995	

FINAL WATER STORAGE AT END OF YEAR 10

LAYER	(INCHES)	(VOL/VOL.)
1	0.21	0.0699
2	0.24	0.0790
3	0.41	0.0686
4	16.79	0.1399
5	0.41	0.0341
6	16.92	0.1410
7	0.41	0.0341
8	16.92	0.1410
9	4.08	0.0340
10	4.08	0.0340
11	4.08	0.0340
12	4.08	0.0340
SNOW WATER	0.00	

Exhibit 11B: Water Balance Calculations

LONG HOLLOW LANDFILL
WATER BALANCE CALCULATION
11 - 30 YEARS

FAIR GRASS

LAYER 1

VERTICAL PERCOLATION LAYER

THICKNESS	=	6.00 INCHES
POROSITY	=	0.4730 VOL/VOL
FIELD CAPACITY	=	0.2217 VOL/VOL
WILTING POINT	=	0.1043 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1050 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.001560000004 CM/SEC

LAYER 2

BARRIER SOIL LINER

THICKNESS	=	18.00 INCHES
POROSITY	=	0.4224 VOL/VOL
FIELD CAPACITY	=	0.3495 VOL/VOL
WILTING POINT	=	0.2648 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4224 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000000850000 CM/SEC

LAYER 3

VERTICAL PERCOLATION LAYER

THICKNESS	=	6.00 INCHES
POROSITY	=	0.4570 VOL/VOL
FIELD CAPACITY	=	0.0831 VOL/VOL
WILTING POINT	=	0.0326 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0686 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.003100000089 CM/SEC

LAYER 4

VERTICAL PERCOLATION LAYER

THICKNESS	=	120.00 INCHES
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POROSITY	=	0.5200 VOL/VOL
FIELD CAPACITY	=	0.2942 VOL/VOL
WILTING POINT	=	0.1400 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1399 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000199999995 CM/SEC

LAYER 5

VERTICAL PERCOLATION LAYER

THICKNESS	=	12.00 INCHES
POROSITY	=	0.4570 VOL/VOL
FIELD CAPACITY	=	0.0831 VOL/VOL
WILTING POINT	=	0.0326 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0341 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.003100000089 CM/SEC

LAYER 6

VERTICAL PERCOLATION LAYER

THICKNESS	=	120.00 INCHES
POROSITY	=	0.5200 VOL/VOL
FIELD CAPACITY	=	0.2942 VOL/VOL
WILTING POINT	=	0.1400 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1410 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000199999995 CM/SEC

LAYER 7

VERTICAL PERCOLATION LAYER

THICKNESS	=	12.00 INCHES
POROSITY	=	0.4570 VOL/VOL
FIELD CAPACITY	=	0.0831 VOL/VOL
WILTING POINT	=	0.0326 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0341 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.003100000089 CM/SEC

LAYER 8

VERTICAL PERCOLATION LAYER

THICKNESS	=	120.00 INCHES
POROSITY	=	0.5200 VOL/VOL
FIELD CAPACITY	=	0.2942 VOL/VOL
WILTING POINT	=	0.1400 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1410 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000199999995 CM/SEC

LAYER 9

VERTICAL PERCOLATION LAYER

THICKNESS	=	120.00 INCHES
POROSITY	=	0.3509 VOL/VOL
FIELD CAPACITY	=	0.0705 VOL/VOL
WILTING POINT	=	0.0326 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0340 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000155000002 CM/SEC

LAYER 10

VERTICAL PERCOLATION LAYER

THICKNESS	=	120.00 INCHES
POROSITY	=	0.3509 VOL/VOL
FIELD CAPACITY	=	0.0705 VOL/VOL
WILTING POINT	=	0.0326 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0340 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000155000002 CM/SEC

LAYER 11

VERTICAL PERCOLATION LAYER

THICKNESS	=	120.00 INCHES
POROSITY	=	0.3509 VOL/VOL
FIELD CAPACITY	=	0.0705 VOL/VOL
WILTING POINT	=	0.0326 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0340 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000155000002 CM/SEC

LAYER 12

VERTICAL PERCOLATION LAYER

THICKNESS	=	120.00 INCHES
POROSITY	=	0.3509 VOL/VOL
FIELD CAPACITY	=	0.0705 VOL/VOL
WILTING POINT	=	0.0326 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0340 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000155000002 CM/SEC

GENERAL SIMULATION DATA

SCS RUNOFF CURVE NUMBER	=	74.26
-------------------------	---	-------

EVAPOTRANSPIRATION

TOTALS	0.427	0.403	0.344	0.272	0.271	0.720
	0.998	1.168	0.541	0.425	0.371	0.387
STD. DEVIATIONS	0.225	0.165	0.158	0.077	0.142	0.495
	0.960	0.718	0.442	0.336	0.220	0.210

PERCOLATION FROM LAYER 2

TOTALS	0.0514	0.0228	0.0048	0.0022	0.0424	0.0029
	0.0124	0.0215	0.0106	0.0697	0.0078	0.0228
STD. DEVIATIONS	0.1247	0.0806	0.0154	0.0097	0.0873	0.0072
	0.0313	0.0403	0.0297	0.1287	0.0294	0.0660

PERCOLATION FROM LAYER 12

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 20

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	6.62 (1.972)	33100.	100.00
RUNOFF	0.000 (0.000)	0.	0.00
EVAPOTRANSPIRATION	6.326 (1.943)	31631.	95.56
PERCOLATION FROM LAYER 2	0.2714 (0.3346)	1357.	4.10
PERCOLATION FROM LAYER 12	0.0000 (0.0000)	0.	0.00
CHANGE IN WATER STORAGE	0.294 (0.244)	1469.	4.44

PEAK DAILY VALUES FOR YEARS 1 THROUGH 20

	(INCHES)	(CU. FT.)
PRECIPITATION	1.59	7950.0
RUNOFF	0.000	0.0

PERCOLATION FROM LAYER 2 0.0312 156.0

HEAD ON LAYER 2 1.7

PERCOLATION FROM LAYER 12 0.0000 0.0

SNOW WATER 0.96 4789.2

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.2813

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.0971

FINAL WATER STORAGE AT END OF YEAR 20

LAYER	(INCHES)	(VOL/VOL)
1	0.88	0.1466
2	7.60	0.4224
3	0.51	0.0844
4	22.10	0.1842
5	0.43	0.0360
6	16.92	0.1410
7	0.41	0.0342
8	16.92	0.1410
9	4.08	0.0340
10	4.08	0.0340
11	4.08	0.0340
12	4.08	0.0340

SNOW WATER 0.20

Exhibit 11C: Water Balance Calculations

LONG HOLLOW LANDFILL
 WATER BALANCE CALCULATION
 31 - 50 YEARS

FAIR GRASS

LAYER 1

VERTICAL PERCOLATION LAYER

THICKNESS	=	6.00 INCHES
POROSITY	=	0.4730 VOL/VOL
FIELD CAPACITY	=	0.2217 VOL/VOL
WILTING POINT	=	0.1043 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1466 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.001560000004 CM/SEC

LAYER 2

BARRIER SOIL LINER

THICKNESS	=	18.00 INCHES
POROSITY	=	0.4224 VOL/VOL
FIELD CAPACITY	=	0.3495 VOL/VOL
WILTING POINT	=	0.2648 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4224 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000000850000 CM/SEC

LAYER 3

VERTICAL PERCOLATION LAYER

THICKNESS	=	6.00 INCHES
POROSITY	=	0.4570 VOL/VOL
FIELD CAPACITY	=	0.0831 VOL/VOL
WILTING POINT	=	0.0326 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0844 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.003100000089 CM/SEC

LAYER 4

VERTICAL PERCOLATION LAYER

THICKNESS	=	120.00 INCHES
POROSITY	=	0.5200 VOL/VOL
FIELD CAPACITY	=	0.2942 VOL/VOL
WILTING POINT	=	0.1400 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1842 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000199999995 CM/SEC

LAYER 5

VERTICAL PERCOLATION LAYER

THICKNESS	=	12.00 INCHES
POROSITY	=	0.4570 VOL/VOL
FIELD CAPACITY	=	0.0831 VOL/VOL
WILTING POINT	=	0.0326 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0360 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.003100000089 CM/SEC

LAYER 6

VERTICAL PERCOLATION LAYER

THICKNESS	=	120.00 INCHES
POROSITY	=	0.5200 VOL/VOL
FIELD CAPACITY	=	0.2942 VOL/VOL
WILTING POINT	=	0.1400 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1410 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000199999995 CM/SEC

LAYER 7

VERTICAL PERCOLATION LAYER

THICKNESS	=	12.00 INCHES
POROSITY	=	0.4570 VOL/VOL
FIELD CAPACITY	=	0.0831 VOL/VOL
WILTING POINT	=	0.0326 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0342 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.003100000089 CM/SEC

LAYER 8

VERTICAL PERCOLATION LAYER

THICKNESS	=	120.00 INCHES
POROSITY	=	0.5200 VOL/VOL
FIELD CAPACITY	=	0.2942 VOL/VOL
WILTING POINT	=	0.1400 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1410 VOL/VOL

SATURATED HYDRAULIC CONDUCTIVITY = 0.000199999995 CM/SEC

LAYER 9

VERTICAL PERCOLATION LAYER

THICKNESS	=	120.00 INCHES
POROSITY	=	0.3509 VOL/VOL
FIELD CAPACITY	=	0.0705 VOL/VOL
WILTING POINT	=	0.0326 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0340 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000155000002 CM/SEC

LAYER 10

VERTICAL PERCOLATION LAYER

THICKNESS	=	120.00 INCHES
POROSITY	=	0.3509 VOL/VOL
FIELD CAPACITY	=	0.0705 VOL/VOL
WILTING POINT	=	0.0326 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0340 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000155000002 CM/SEC

LAYER 11

VERTICAL PERCOLATION LAYER

THICKNESS	=	120.00 INCHES
POROSITY	=	0.3509 VOL/VOL
FIELD CAPACITY	=	0.0705 VOL/VOL
WILTING POINT	=	0.0326 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0340 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000155000002 CM/SEC

LAYER 12

VERTICAL PERCOLATION LAYER

THICKNESS	=	120.00 INCHES
POROSITY	=	0.3509 VOL/VOL
FIELD CAPACITY	=	0.0705 VOL/VOL
WILTING POINT	=	0.0326 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0340 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000155000002 CM/SEC

STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000

EVAPOTRANSPIRATION

TOTALS	0.438	0.393	0.344	0.262	0.334	0.677
	1.015	1.160	0.555	0.401	0.364	0.396

STD. DEVIATIONS	0.223	0.178	0.163	0.071	0.304	0.445
	0.990	0.713	0.452	0.314	0.188	0.203

PERCOLATION FROM LAYER 2

TOTALS	0.0524	0.0175	0.0041	0.0039	0.0364	0.0019
	0.0124	0.0269	0.0107	0.0674	0.0137	0.0245

STD. DEVIATIONS	0.1246	0.0543	0.0095	0.0170	0.0894	0.0069
	0.0313	0.0522	0.0297	0.1192	0.0416	0.0655

PERCOLATION FROM LAYER 12

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 20

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	6.62 (1.972)	33100.	100.00
RUNOFF	0.000 (0.000)	0.	0.00
EVAPOTRANSPIRATION	6.340 (1.909)	31699.	95.77
PERCOLATION FROM LAYER 2	0.2718 (0.3216)	1359.	4.11
PERCOLATION FROM LAYER 12	0.0000 (0.0000)	0.	0.00
CHANGE IN WATER STORAGE	0.280 (0.247)	1401.	4.23

PEAK DAILY VALUES FOR YEARS 1 THROUGH 20

	(INCHES)	(CU. FT.)
PRECIPITATION	1.59	7950.0

RUNOFF	0.000	0.0
PERCOLATION FROM LAYER 2	0.0312	155.8
HEAD ON LAYER 2	1.7	
PERCOLATION FROM LAYER 12	0.0000	0.0
SNOW WATER	0.96	4789.0

MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.2825
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MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0972
-----------------------------------	--------

FINAL WATER STORAGE AT END OF YEAR 20

LAYER	(INCHES)	(VOL/VOL)
1	0.85	0.1416
2	7.60	0.4224
3	0.51	0.0843
4	27.05	0.2254
5	0.91	0.0757
6	16.93	0.1411
7	0.41	0.0343
8	16.92	0.1410
9	4.08	0.0340
10	4.08	0.0340
11	4.08	0.0340
12	4.08	0.0340

SNOW WATER	0.20
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P.O. Box 249
90 North 200 East
Loa, Utah 84747-0249
Office: 435-836-2685
Fax # 435-836-2870

September 8, 2003

Division of Solid & Hazardous Waste

Salt Lake City UT

RE: Longhollow Landfill Site

To Whom It May Concern:

Brown Brothers Construction Co. will reclaim landfill for \$3.00 per yard for cover material and \$2.00 per yard for all topsoil.

Sincerely,

A handwritten signature in cursive script that reads 'Ellis Brown'.

Ellis Brown. Secretary

ESCROW AGREEMENT

I. SUMMARY

A. Parties to the Agreement:

1. Depositor: _____ (the "Entity")
Address: _____

Contact: _____ Tel. No. _____
_____ Tel. No. _____

2. State Agency: Utah Division of Solid & Hazardous Waste (the "State")
Address: P.O. Box 144880
Salt Lake City, Utah 84114-4880

Contact: Ralph Bohn, Section Mgr. Tel. No. 801-538-6170
_____ Tel. No. _____
_____ Tel. No. _____

3. Escrow Agent: Utah State Treasurer (the "Treasurer")
215 State Capitol
Salt Lake City, Utah 84114

Contact: Robert C. Kirk, Financial Manager
Stephanie Baldes, Accountant

Telephone: (801)538-1042 Telefax: (801)538-1465 Toll free: 800-395-7665

B. Deposit Amount(s):

1. Principal amount \$ _____ (the "Proceeds")

2. Additional amount(s), if any:

\$ _____ From: _____
\$ _____ From: _____
\$ _____ From: _____

C. Authorizing Resolution:

_____ (the "Instrument")

D. Project Description:

_____ (the "Project")

This Summary is an integral part of the Escrow Agreement

II. AGREEMENT

- A. The undersigned hereby deliver to the Treasurer, the Proceeds and Additional amount(s) to be held and disposed of by the Treasurer in accordance with the duties, instructions, and upon the terms and conditions hereinafter set forth in this Escrow Agreement to which the undersigned hereby agree:
1. For purposes of this Escrow Agreement and this Escrow Agreement only:
 - (a) The Treasurer shall not incur any liability in acting upon any written authorization and request delivered hereunder and believed by the Treasurer to be genuine and to be signed by the proper parties.
 - (b) The Treasurer may consult with legal counsel in the event of any dispute or question as to the construction of the Treasurer's duties hereunder and shall not be held to any liability for acting in accordance with advice so received.
 - (c) The Treasurer shall have a first lien on the moneys held by it hereunder for its compensation and for any costs, liability or expense or counsel fees it may incur.
 2. In the event of any disagreement between the undersigned or any of them, and/or any other person, resulting in adverse claims and demands being made in connection with or for any moneys involved herein or affected hereby, the Treasurer shall be entitled at its option to refuse to comply with any such claim or demand, so long as such disagreement shall continue, and in so refusing the Treasurer may refrain from making any delivery or other disposition of any moneys involved herein or affected hereby and in so doing the Treasurer shall not be or become liable to the undersigned or any of them or to any person or party for its failure or refusal to comply with such conflicting or adverse demands, and the Treasurer shall be entitled to continue so to refrain and refuse so to act until:
 - (a) The rights of the adverse claimants have been finally adjudicated in a court assuming and having jurisdiction of the parties and the moneys involved herein or affected hereby; and/or
 - (b) All differences shall have been adjusted by agreement and the Treasurer shall have been notified thereof in writing signed by all of the persons interested.
 3. The fees for the usual services of the Treasurer under the terms of this Escrow agreement are set forth in the schedule attached hereto as **Exhibit A**. It is agreed that additional compensation shall be paid to the Treasurer for any additional or extraordinary service it may be requested to render hereunder, and the Treasurer shall be reimbursed for any out-of-pocket expenses (including, without limitation, fees of counsel) reasonably incurred in connection with additional or extraordinary services.
 4. The Entity and the State hereby agree that the deposit of the Proceeds shall constitute compliance with applicable deposit and investment provisions of the Instrument.
 5. The duties of the Treasurer under the terms of this Escrow Agreement are as follows:
 - (a) The Treasurer shall receive into a separate fund (the "Escrow Account") Proceeds and any additional amounts to be used in connection with the Project.
 - (b) The Treasurer shall reimburse Entity in amounts authorized in writing by the Entity and the State.
 - (c) Each authorization must be signed by one official from both the Entity and the State, except as provided in (i) of this section, and shall be substantially the same as the form attached as Exhibit B. On behalf of the Entity, the written authorization and request shall be signed by any one of the officials of the Entity identified in Section I.A. 1. above. On behalf of the State, the written authorization and request shall be signed by any one of the officials of the State identified in Section I.A.2. above. The Treasurer assumes no responsibility for expenditure

of moneys paid out of the Escrow Account pursuant to a written authorization and request properly signed and delivered the Treasurer as provided herein.

- (i) If the Entity fails to provide closure, post-closure, or corrective action of the solid waste management facility as required by the *Utah Solid Waste Permitting and Management Rules* and the Entity's solid waste disposal permit, the Executive Secretary will issue an order to close under the authority of Section 19-6-107(7) of the Utah Solid and Hazardous Waste Act. Upon completion of the Administrative process, including the Entity's right to contest and appeal the administrative action, the State may independently request, in writing, reimbursement to a State-approved and authorized third party for the costs related to the third party's activities for closure, post-closure or corrective actions at the facility.
- (d) If a written authorization and request indicates that an amount (the "Retained Amount") payable to a Provider is to be held for retainage pending completion of the Project or the lapse of time, the Treasurer shall segregate such amount and shall invest the Retained Amount in an interest-bearing account (the "Separate Account"), the interest on which shall accrue for the benefit of the Provider. The Retained Amount and all accrued interest thereon shall be disbursed by the Treasurer in the same manner as provided in paragraph 5(b) hereof. All fees charged or incurred by the Treasurer relating to the establishment, investment and disbursement of the Separate Account shall be borne solely by the Provider and may be withheld by the Treasurer from the Separate Account prior to the disbursement thereof; provided, however, that if such fees are borne by the Separate Account, and if the interest earned on the Separate Account is less than the amount of such fees, then the fees withheld from such Separate Account shall not exceed the interest earned and the balance of such fees shall be paid by the Entity.
- (e) The funds deposited by the parties hereto in the Escrow Fund and in any Separate Account shall be invested by the Treasurer in the Utah Public Treasurers' Investment Fund established by Section 51-7-5 of the Utah Code. All interest earned on moneys held in the Escrow Account shall be retained therein and disbursed as provided herein.
- (f) The Treasurer shall report at least monthly concerning the receipts, disbursements and status of the Escrow Account. The reports shall be mailed to the Entity and to the State at their respective addresses as shown in Section I.A. above. Notification of changes of address, if any, shall be in writing and mailed to the parties at their respective addresses as shown in Section I.A. above.
- (g) This Escrow Agreement will be terminated after payment of the fees and out-of-pocket expenses of the Treasurer, and upon liquidation of the Escrow Account as provided herein. This Escrow Account, upon the earlier to occur of:
 - (i) receipt by the Treasurer of a written authorization and request, signed as provided in paragraph 5(c) hereof, stating that the acquisition, construction, improvement and extension of the Project is complete, that all obligations and costs in connection with the Project which are payable out of the Escrow Account have been paid and discharged, and that the Treasurer is authorized and directed to transfer all moneys in the Escrow Fund to the Entity or such other disposition as may be agreed by the State and the Entity; or
 - (ii) receipt by the Treasurer of a written certificate of the State, signed by the appropriate representatives thereof as identified in paragraph 5(c) hereof, stating that at least months have expired from the date of this Agreement and that all remaining moneys in the Escrow Account are to be transferred to the State as a prepayment on the Bond purchased by the State or such other disposition as may be specified by the State.

6. This Agreement may be modified or amended only by a written Amendment attached to this Agreement and signed by the parties to this Agreement.

DATED this ____ day of _____, 200 ____.

Entity: _____

By: _____

Title: _____

Attest and Countersign:

By: _____

Title: _____

STATE: Utah Division of Solid and Hazardous Waste

By: _____

Title: Executive Secretary
Utah Solid & Hazardous Waste Control Board

Accepted:

Utah State Treasurer

By: _____

Title: _____

EXHIBIT A

Fees due to State Treasurer as Escrow Agent

Maximum annual fee is 10 basis points (one-tenth of one percent (.001)) applied to the average daily balance in each account. The fee is assessed monthly based on the actual number of days in the month divided by 360 days.

Minimum annual fee is zero.

The Treasurer intends to deduct the administrative fee from gross earnings of each account before crediting earnings to the account(s). The amount of such fees is not reflected on monthly statements to the Entity, and is payable only from gross earnings on the account(s).

Entity shall not be liable to the Treasurer for any other costs or expenses for usual services. Usual services include:

1. Acceptance of funds delivered for deposit.
2. Deposit of funds and issuance of Treasurer's Receipt.
3. Investment of all funds delivered to Treasurer.
4. Credit net interest earnings to designated account(s) on a monthly basis.
5. Reimburse entity for project costs pursuant to receipt of a written authorization and request properly signed and delivered to the Treasurer.
6. Prepare and deliver to Entity and State a monthly accounting showing all deposits, withdrawals, interest credits and rate, ending balance and average balance for each account.

Entity will be liable to the Treasurer for out-of-pocket expenses resulting from any additional or extraordinary service Treasurer is requested to render and reasonably incurs in connection with additional or extraordinary services.

EXHIBIT B -1

WRITTEN AUTHORIZATION AND REQUEST FOR REIMBURSEMENT
FROM ESCROW FUND

TO: The Utah State Treasurer, as Escrow Agent (the "Treasurer").

DATE: _____

WRITTEN REQUEST NO.: _____

I, the undersigned authorized officer of _____, (the "Entity"),
do hereby certify and request to the Treasurer as follows:

7. Pursuant to the provisions of the Escrow Agreement by and between the Entity, the State and the Treasurer dated _____, (the "Escrow Agreement"), the undersigned hereby authorizes and requests a reimbursement from the Escrow Account to pay the amounts shown on the attached Payment Schedule.
8. Each payment proposed to be made as set forth on the Payment Schedule has been incurred and is a proper charge against the Escrow Account.
9. To the extent that the payment of any item set forth on the Payment Schedule is for other than work, materials, equipment or supplies, in connection with this authorization and request, the undersigned certifies that each payment proposed to be made on the Payment Schedules is a proper charge against the Escrow Account, is a reasonable amount and has not been heretofore included in a prior Written Authorization and Request for Reimbursement for the Escrow Account.
10. This Written Authorization and Request, including the Payment Schedule attached hereto, shall be conclusive evidence of the facts and statements set forth herein.
11. A copy of this Written Authorization and Request is being kept on file in the official records of the Entity.

The terms used herein which are defined in the Escrow Agreement shall have the respective meanings therein assigned to them.

By: _____

Title: _____

EXHIBIT B-2

I/we, the undersigned authorized officer(s) of the State, do hereby certify and request to the Treasurer as follows:

1. I/we have reviewed the foregoing statements of the authorized officer of the Entity attached hereto, and on behalf of the State approve the request for payment from the Escrow Fund made therein; provided that the State has not independently verified the statements of such authorized officer of the Entity attached hereto and makes no representations or certifications with respect thereto.
2. A copy of this Written Authorization and Request is being kept on file in the official records of the State.

The terms used herein shall have the same meanings assigned to them in the attached statements of the authorized officer of the Entity.

Dated the date appearing at the top of the attached statements of the authorized officer of the Entity.

STATE:

By: _____

Title: _____

EXHIBIT B -3

REIMBURSEMENT SCHEDULE

Check No.	Person or Firm	Amount	Purpose
-----------	----------------	--------	---------

Reimbursement for the above listed payments totaling \$_____ is to be made to _____
_____ ("Entity") by transfer of funds from the Escrow Account (PTIF#_____) to
(CHECK ONE):

_____ Entity's general account in the Public Treasurer's Investment Fund
(PTIF#); or to

_____ Entity's checking account at _____ ("Bank").
Account number _____

RETAINAGE REQUEST

In addition to the above listed reimbursement, transfer the following retainage amounts:

From Escrow Acct.#	To Retainage Acct.#	For Contractor (name)	#Amount
--------------------	---------------------	-----------------------	---------

_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Contact Person at time of Wire Transfer _____
(name) (phone #)

UTAH STATE TREASURER
UTAH PUBLIC TREASURERS' INVESTMENT FUND
New Account Application and Change Form

DATE _____

A. Title of Account _____

B. PTIF Account Number(s) _____

ACTION:

<input type="checkbox"/> Create New PTIF Account (Sec. A,C,D,E,F)	<input type="checkbox"/> Change Bank/Account (Sec. A,B,E,F).	<input type="checkbox"/> Add Bank/Account (Sec. A,B,E,F)
<input type="checkbox"/> Change Address (Sec. A,B,D,F)	<input type="checkbox"/> Change Authorized Individuals (Sec. A,B, C,F)	<input type="checkbox"/> Change Internet Access (Sec. A,B,C,F)

C. Individuals Authorized to Make Deposits/Withdrawals:

<u>NAME</u>	<u>TITLE</u>	<u>PHONE</u> <u>INTERNET</u> <u>ACCESS</u> (Y/N) *
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____

D. PTIF Statement Mailing Address: _____
Attn: _____

E. Bank (Depository) Information:

New/Additional Bank

Delete Bank

a. Name of Bank _____	Name of Bank _____
b. Account Number _____	Account Number _____
<input type="checkbox"/> Checking <input type="checkbox"/> Savings <input type="checkbox"/> Other _____	

F. **Authorization:** In accordance with applicable statutes and procedures established by the Utah State Treasurer, we the undersigned hereby authorize the Utah State Treasurer to make the above changes and/or initiate wire and/or automated clearing house (ACH) credit entries and/or debit entries to our bank indicated above. The depository named above is authorized to credit and/or debit the same to such account. This authorization is to remain in full force and effect until the Utah State Treasurer has received written notification from us of its termination.

Signed _____ (Date)	Signed _____ (Date)
------------------------	------------------------

Name _____	Name _____
Title _____	Title _____

TWO SIGNATURES REQUIRED

Please **attach a deposit slip** and return this form to:

Utah State Treasurer's Office
215 State Capitol
Salt Lake City, Utah 84114

